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ERYTHROBLASTOSIS FOETALIS

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DEFINITION

ERYTHROBLASTOSIS FOETALIS is a disease affecting the foetus or infant due to the presence of maternal antibodies which are specific for antigens present in the foetal red cells. Other common names for the condition are haemolytic anaemia of the newborn and congenital haemolytic disease.

ETIOLOGY

Prior to 1941 there were at least fifteen different theories, including nutritional disturbance in the mother, metabolic upsets of mother or foetus, maternal infection, toxins — foetal and maternal, neoplastic conditions of the foetal haemopoetic system, hereditary transmission of a gene — dominant or recessive, lack of sufficient antianaemic principle of Castle reaching the foetis,[1] and vitamin K deficiency.[2]

In 1938 Darrow[3] published a brilliant paper in which she pointed out that any theory must explain the following facts: the good health of the parents, the absence of any hereditary factor, the familial tendency (normal children usually precede affected ones in the family), the association of hydrops foetalis, icteris gravis, and anaemia of the newborn, and the clinical, pathological and haematological findings. She concluded that the condition must be due to an antigen-antibody reaction involving the foetal red cells. Hydrops foetalis and icteris gravis could be accounted for by placental transmission, while ingestion of colostrum could explain the exacerbations.

In 1940 Landsteiner and Weiner[4] found that serum from a rabbit previously injected with rhesus monkey blood contained agglutinating antibodies for the monkey's red cells, and for the red cells of 85% of humans—after absorption of species specific antibodies. They named the antigen present in the monkey red cells and in the red cells of 85% of humans the rhesus or Rh factor. The 85% of humans who possessed the antigen were designated as Rh positive, while the 15% who lacked it were called Rh negative. Weiner and Peters soon noted that the serum of patients suffering severe intra-group transfusions reactions contained Rh antibodies similar to those of the immunized rabbit. During 1941 Levine[5] and his associates established Rh immunization as the cause of erythroblastosis foetalis.

Rapid progress from 1941 to 1947 led to the identification of not one, but six Rh antigens. Space does not permit discussion of the evolution of the many Rh

subgroups. In such rapid growth there was bound to be difficulty with nomenclature and classification, Weiner alone having used four different classifications from 1943 to 1946. The two commonly used nomenclatures are those of Fisher and Weiner. Fisher believes Rh to be transmitted by three pairs of allelic genes at closely associated loci. These genes are called:

Fisher	*Weiner*
C c	R′ H′
D d	R° H°
E e	R″ H″

Each gene represents one antigen, and in order of potency are D, C, E, c; d and e being extremely weak antigens. The following is an example of how these genes are combined to give an individual Rh type:

Fisher Genotype	*Weiner* Phenotype	
C D e		
or R$_z$r =	C D e or	Rh$_z$
c d e		

The group of three genes is located on a single chromosome. Weiner's shorthand scheme represents these by a single letter. The phenotype is what the individual is seen to be by ordinary laboratory methods; the genotype represents the actual genetic constitution.

Mathematically there are 36 possible genotypes and 27 possible phenotypes. Only a few are common; D is commonly linked with C or E on the chromosome, hence C D e and c D E are common, while c D e is uncommon and C d E is very rare or unknown. Occurrence of the various phenotypes as recognized by anti Rh (anti C, D and E) sera is:

Fisher	*Weiner*	
c d e	Rh$^-$	12.9%
c D e	Rh°	1.9
C D e	Rh$_1$	53.7
c D E	Rh$_2$	14.4
C d e	Rh′	0.9
c d E	Rh″	0.5
C D E	Rh$_z$	15.3
C d E	Rh$_y$	0.01

If all the anti Hr (anti c, d, and e) sera were available theoretically, 27 different groups would be distinguishable. Recently[6] there has been described a variability in the Rh antigen present at the Cc locus, the varients being C^w, C^v and C^u, and similarly a varient of D called D^u.

A person may be homozygous or heterozygous. For example, c d e c d e and C D e C D e are homozygous, while C D e c d e is heterozygous. C D e c D E is homozygous for D only.

Except in research centres, hospitals have only one antiserum, which is anti D, and is a mixture of anti D and anti D^u. If a person has the antigen D he is reported Rh positive; if he lacks D he is reported Rh negative.

The inheritance of Rh is of importance in our understanding of erythroblastosis foetalis. For example:

♂	♀	
C c	c c	Rh positive (heterozygous) father. Rh negative mother.
D d	d d	
e e	e e	
C c	c c	50% of offspring Rh. positive,
D d	d d	
e e	e e	50% Rh negative.
50%	50%	

Fisher's theory explains the occurrence of the rare types as mutations resulting from crossing of the chromosomes. For example:

C c		C c		C c
D d	⟶	d D	⟶	d D
e e		e e		e e

In the circumstance that an Rh negative mother has an Rh positive foetus, if foetal red cells leak across the placenta, or if she has been previously transfused with Rh positive blood, she may develop antibodies which on reaching the foetal circulation may destroy these red cells, resulting in erythroblastosis foetalis. Only the stronger antigens are capable of initiating this process, d and e never causing the condition. The various Rh antigens cause over 90% of the cases of erythroblastosis foetalis. Of the remaining cases a few are known to be due to K or k antigens or the S antigen. No cases have been recorded as due to M, N or P incompatability, and no proven case has been found due to A-B incompatability. A few cases occur which are apparently not due to any of the antigens which have been discovered to date.

PATHOGENESIS

In the absence of a history of previous transfusion, abortion or full term pregnancy, the disease is very rare. The reason why first-born children in the family should escape and subsequent children in the family suffer from erythroblastosis foetalis would appear to be that immunization must ordinarily be instituted prior to the pregnancy resulting in the affected foetus. The methods of immunization of the mother are transfusions with Rh positive blood or leakage across the placenta of foetal Rh positive red cells. The resulting maternal antibodies crossing the placenta reach the foetal circulation destroying the foetal red cells. The rarity of the disease in first pregnancies suggests that either in the first pregnancy antibodies are not produced in sufficiently high titre to cause foetal injury, or that some condition associated with delivery is responsible for the entrance of foetal red cells into the maternal circulation, i.e., faulty separation of the placenta, Caesarian section, or manipulations in the second or third stage of labor.[7] The anaemia, jaundice, oedema and other clinical manifestations of the disease are due to the rapid destruction of the foetal red cells and consequent liver damage due to overloading with blood pigment while the extramedullary haematopoesis would appear to be a compensatory mechanism.

Rh immunization once established would appear to be permanent, although the antibody titre may temporarily fall.

INCIDENCE

The condition is much more common in whites than in the coloured races, in which the incidence of Rh negatives is less than 5% of the population. In whites about 15% of women are Rh negative, 13% being married to Rh positive men and 2% to Rh negative men. Since 58% of Rh positive individuals are heterozygous, about 9% of pregnancies are in Rh negative women with an Rh positive husband and an Rh positive baby.

Erythroblastosis foetalis occurs once in about 400 deliveries, although the disease would appear to be much commoner in centres to which Rh negative women are referred because of the presence of antibodies or the previous history of stillbirths. Since the possible incidence is 9% of all children and the actual incidence is 1:400, it is obvious that erythroblastosis foetalis occurs in only one case in 36 in which the necessary conditions obtain, i.e., Rh positive child born to an Rh negative woman.

In any family, erythroblastosis foetalis

rarely affects the first-born, the chance of occurrence increasing with each successive child up to the fifth. However, if the first five children escape there would appear to be less chance that subsequent children will be affected.

The outlook for future siblings of an affected infant is not good. If the father is homozygous Rh positive, almost all will be affected regardless of the number of years elapsing between births. If the father is heterozygous, one half of the subsequent infants should be free of the disease. Since 58% of the population are heterozygous, mathematically 29% of children born subsequent to an affected sibling should escape the disease. However, Race[8] has shown that erythroblastosis foetalis occurs much more commonly when the father is homozygous. Hence, it is found that actually only 4% of these future siblings escape.

PATHOLOGY

In 1932 Diamond, Blackfern and Baty[9] presented one of the classical papers on the subject and established that universal oedema of the newborn, icteris gravis neonatorum and congenital anaemia of the newborn were due essentially to the same condition. Their description of the pathology and haematology was so accurate that few improvements have been made since. The following year Abt[10] noted the relationship of Kernicteris to erythroblastosis foetalis.

The three classes of cases, hydrops foetalis, icteris gravis and congenital anaemia of the newborn are simply differences in the degree of severity.

The first, UNIVERSAL OEDEMA, is seen at birth. Jaundice is absent, splenomegaly and hepatomegaly are marked, and extramedullary haematopoesis is striking in degree. Oedema is extreme. Respiration is rarely established in these infants.

In ICTERIS GRAVIS the infant becomes jaundiced within the first 48 hours. The findings are much the same as in the first group. However, oedema is slight and the jaundice may be severe.

Infants with CONGENITAL ANAEMIA OF THE NEWBORN may show slight or no jaundice, no oedema, no degree of splenomegaly or hepatomegaly. Extramedullary haemotopoesis is slight. In a moderately severe case the following are the typical findings. The skin is pigmented frequently showing ecchymosis. Subcutaneous tissues are often oedematous. The body cavities often show small amounts of clear amber fluid. The lungs are usually normal. However, pulmonary haemorrhage or pneumonia are sometimes seen as terminal events. There is slight cardiac enlargement. The intestines are grossly normal. The liver is moderately enlarged, while the spleen is markedly enlarged. The pancreas, kidney, thymus, adrenals and genitalia are grossly normal, The dura, pia mater and the surface of the brain are an intense yellow. *Microscopically,* the most striking change is extramedullary haematopoesis, the following organs being affected in order of frequency and severity: liver and spleen, kidney in relation to the small vessels, placenta, Peyer's patches in intestines, subcutaneous fatty tissue, muscles and lungs. The capillaries of all organs contain immature red cells. In the liver the bile cannaliculi are plugged with inspissated bile. Fibrosis is of milder degree than in prenatal syphilis. The Malphigian corpuscles of the spleen are often small or absent, and the widely dilated sinusoids give the pulp a lacy appearance. The

bone marrow occasionally contains small areas of mucoid connective tissue; otherwise it appears normal. In the brain, cellular pigmentation is seen in some cases to be widespread, but most marked in the basal ganglia. It is believed by many that the nerve cells must be damaged by anoxia before the deposition of pigment can occur. The placenta is oedematous. The cells covering the villi are relatively immature and there is an increase in stroma cells. Local erythropoesis is uncommon.

CLINICAL PICTURE

Infants with hydrops foetalis are grossly oedematous, this being particularly noticeable about the face. Splenomegaly and hepatomegaly of severe degree will be noted. These infants are often born dead, and if alive respiration is not usually properly established. Only occasionally does one of these children survive.

In the large intermediate (icteris gravis) group the infant may be born pale and have a large liver and spleen. Jaundice will be noted within the first 48 hours, usually within the first 12. Haematological examination reveals a decrease in the red cells often to as low as 350,000 but usually over 1,000,000. The haemoglobin is decreased to a variable extent, often to as low as 4 Gm. In severe cases the RBC and Hb fall rapidly after birth, and untreated the condition will be fatal. The blood smear reveals macrocytosis, anisocytosis, a rapidly developing leucocytosis to 25,000 or more, decreased platelets to 100,000 or less, and many immature forms of the red cell series. Normoblasts may number several hundred per white cell, and erythroblasts and other immature forms are common. Erythrophagocytosis will be seen in some smears. Smears should be taken early, since immature cells usually disappear from the blood stream within a week or less. Red cell fragility is normal. Bleeding and clotting time are prolonged and unresponsive to vitamin K, due to inability of the liver to produce the substances concerned in the clotting mechanism. The icteris index is frequently elevated to 200 - 300 units (50 - 60 being the upper limit in physiological jaundice of the newborn). The icteris index frequently remains as high as 50 for as long as six weeks. Serum proteins are usually normal unless oedema is present.

The jaundice is progressive for several days and often becomes a deep orange colour. By the end of a week it becomes greenish. Cutaneous ecchymotic haemmorrhages are frequently seen. At the end of the first or second week the stools may become acholic for a few days.

Regurgitation of food and diarrhoea are common. In many cases lethargy is marked at the height of the jaundice. This apathy diminishes with the jaundice. In many severe cases hypertonicity, opisthotonus and occasionally convulsions are seen. If these symptoms persist for only a few days the outlook for normal neurological and mental development is good, while if they persist the outlook is poor.

Of those that live, improvement becomes noted in a few days and continues for weeks. Blood destruction may continue at a slower rate for many weeks.

DIAGNOSIS

All pregnant women should be Rh typed, and if a woman is found to be Rh negative, her husband should be typed. If he is found to be Rh positive the woman should be followed closely

and periodic titrations for saline and blocking antibodies (antibodies which only agglutinate red cells in a protein medium such as bovine serum, albumin suspension, etc.). A history of previous pregnancy or transfusion should place one even more on guard. The clinical picture and haematology is helpful. Another aid is the demonstration of antibodies in the foetal serum. A positive Coombs test demonstrating the presence of globulins adherent to the foetal red cells is pathognomonic. Many clinics will not diagnose erythroblastosis foetalis in the presence of a negative Coombs test regardless of how suggestive the rest of the picture is.

DIFFERENTIAL DIAGNOSIS

The only two conditions which may give rise to real difficulty are:

1. Generalized inclusion disease.
2. Prenatal syphilis.

GENERALIZED INCLUSION DISEASE of the newborn is a very rare manifestation of inclusion disease, and can give an identical clinical picture to erythroblastosis foetalis. A study of microscopic sections of the infants tissues will establish the diagnosis. Immunological studies will also be helpful.

PRENATAL SYPHILIS can be differentiated by radiological demonstration of osteochondritis at the ends of the long bones. However, rarely erythroblastosis foetalis can cause bone changes indistinguishable from syphilis.[7] In many cases the diagnosis can be made with certainty only by the maternal Wassermann reaction and the various laboratory procedures outlined in the diagnosis of erythroblastosis foetalis.

Foetal hydrops occurs occasionally in cases other than erythroblastosis foetalis. There is usually an association with congenital malformations. However, the occasional case is seen without demonstrable cause. These cases never have splenomegaly, extramedullary erythropoesis or circulating immature forms.

COMPLICATIONS AND SEQUELAE

Pulmonary haemorrhage is uncommon. Atrophic cirrhosis and Banti's disease may occur in these children. That the incidence is higher in these cases than the general population has not been established.

Kernicterus is frequent. During the severe stage of icteris gravis lethargy, opisthotonus twitchings and even convulsions are not uncommon. Many of these children die; and in some the symptoms last only a few days; others have persistent symptoms such a mental retardation, muscular incoordination, athetoid and choreiform movements, and muscular hypotonia or rigidity associated with spastic diplegia.

The deciduous teeth are occasionally pigmented a bluish green. The permanent teeth are unaffected.

PROGNOSIS

The most severe cases, those with hydrops foetalis, almost always die. The least severe, showing a slowly progressive anaemia with little jaundice, almost always recover.

In the intermediate group, the earlier the appearance of jaundice the graver the prognosis, whereas the earlier adequate treatment is instituted the better the outlook. In this group the salvage rate is about 40%. Of those that survive the first 24 hours about 75% recover. Of those that live a few will show the neurological manifestations of Kernic-

terus. The reported figures vary within wide limits, however, an average estimate is that 15% of those that recover will show permanent neurological sequelae.

PROPHYLAXIS

The prevention of the disease lies in the prevention of maternal immunization.

1. An Rh negative female should never be transfused with Rh positive blood.
2. A woman should never be transfused with her husband's blood because of the possible existence of unrecognized antigens.
3. In Rh negative women the conduct of labor should be such as to minimize the entrance of foetal blood into the maternal circulation. Caesarian sections, manipulative deliveries, long labors and manual removal of the placenta should be avoided where possible.
4. Laws to prevent marriage of Rh negative women to Rh positive men have been advocated. However, this is impractical.
5. Artificial insemination has been successful in some cases. There is considerable religious opposition and the legal implications are not clear.
6. In 1947 Bettina Carter extracted from Rh positive cells by means of alcoholic and ether extraction a lipid which appears to be Rh hapten. (A hapten as defined by Landsteiner is a substance which, when linked to an antigenic protein determines immunologic specificity. A hapten is non-antigenic in itself, but in vitro at least will react with antibodies produced by the hapten-protein complex.[14]) It had been anticipated by Weiner and others that if such a Rh hapten could be isolated and given to women with demonstrable Rh antibodies it would react with these antibodies, lowering their titre and hence preventing foetal damage. This has been tried, giving periodic intramuscular injections at 100 mg. to 200 mg. of hapten in 1 cc. of alcohol, suspended in 100 cc. of normal saline. Carter[11] in "The implications of Rh Hapten" and Goldsmith[12] have described series of cases in which hapten has been employed successfully to lower the maternal antibody titre, and resulting in the delivery of normal babies. In some cases diseased siblings had previously been born, and the father found to be homozygous. They also employed hapten along with transfusion in the treatment of infants with severe manifestations of erythroblastosis foetalis and claimed better results than would be expected from transfusion alone. These results, however, have not been duplicated by others, and the status of the hapten is as yet uncertain.

TREATMENT

Early replacement transfusion of about 150 cc. using the technique of Diamond appears to be the treatment of choice. This may be followed at a later date by the further administration of one or more small transfusions as indicated by the haemoglobin level. In the very mild cases replacement transfusion is unnecessary and small transfusions as indicated may be given. It is well recognized that Rh negative blood should be used. If not available the mother's well-washed red cells suspended in saline may be used.

Recently Diamond[13] in a careful statistical analysis has established beyond

doubt that the prognosis is improved if Rh negative blood from female donors only is used. The reason why blood from females is preferable to that from males is not known.

Some clinics are of the opinion that infants with erythroblastosis foetalis should not be breast fed by their mothers, because of the presence of antibodies in the milk.

SUMMARY

Erythroblastosis foetalis is a foetal disease due to maternal antibodies specific for the foetal red blood cells. The condition is uncommon, occurring once in about 400 deliveries. The anaemia, hepatomegaly, splenomegaly and jaundice are all secondary to the destruction of foetal red blood cells, and the compensatory extramedullary haematopoesis. The various clinical pictures are due to degrees in the severity of the red blood cell destruction.

Diagnosis depends upon a recognition of pallor, jaundice or oedema, with or without splenomegaly and hepatomegaly, decrease in red blood cells count, decrease of haemoglobin and platelets, leucocytosis to 25,000 or more and the presence of immature cells of the erythroid series in the circulating blood.

One should be alert when a prenatal examination reveals a Rh negative woman with a Rh positive husband. Should Rh antibodies develop, the woman should be referred for delivery to a centre where complete laboratory facilities are available. After delivery a Coombs test is the single most important diagnostic aid.

The prognosis in recent times has been about 40 percent survival in cases of moderate severity.

Good obstetrics at present is the only prophylaxis. The role and status of a hapten is uncertain.

Diamond has shown that the treatment of choice is early replacement transfusion, using Rh negative blood from female donors.

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MEDICAL HISTORY WRITING

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EVERY TEXTBOOK on medical diagnosis contains a chapter on history-taking, yet no one has ever learned to take histories by reading. This article is intended to inspire a philosophy of history-taking and to suggest practical points in achieving the desired end. You will forgive me if it is moulded particularly for final year students working on the medical wards of the hospital under the present teaching system. However, this is a vital part of the course and the principles are much more widely applicable. Many of the lessons learned on the wards will be practised by the doctor for the remainder of his life.

We are all aware that a good history is the most important factor in the majority of diagnoses. Most diseases can be identified by careful analysis of the symptoms before there are any diagnostic findings.

Though we do a "complete" physical examination on every patient, how we look and what we find are greatly influenced by what the history suggests. One example of this is in examination of the spleen. The routine is to place your hand at two or three different places in the left upper quadrant and ask the patient to take a deep breath. However, if the history of a certain patient has suggested a possible diagnosis of infectious mononucleosis, you will place your hand on four or five different places. You may spend some minutes teaching your patient that difficult feat of making the diaphragm descend when she breathes in instead of the usual paradoxical response when she is asked to breathe deeply. Then you go on to other tricks: stand at her left side and hook your fingers over the costal margin; roll the patient on her right side, and so on. Such detail is not practical for your routine examination of every portion of the body. Others often add important physical findings because the history is more significant to them and leads them to look particularly regarding those findings.

From what has already been said it is obvious that the history not only leads to the diagnosis but also reveals the history-taker's differential diagnosis and thought processes in working out the problem, his knowledge of diseases and even his curiosity about the uncounted, as yet unanswered, problems of sick people. Arriving at a correct diagnosis is the least important gain of the student history-taker. Indeed, I have often been pleased in examining students' histories to find a wrong diagnosis at the end when it means the student has attempted to see the problem and work it out for himself. He has certainly learned more from that experience, and also from his mistakes, than he could ever gain from the chart or the internes.

The inter-personal encounter of taking a good history is one of the best examples of the art of medicine. You have to gain and keep rapport, confidence that you are wholly interested in helping your patient, and his active,

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eager co-operation in working with you. You have to bring him into a world of precise definition that is entirely foreign to him. You have to obtain his best possible recall of observations that meant nothing to him. You have to get fine distinctions made without asking leading questions. The patient must think he is pleasing you without getting notions that any particular answer pleases you more than an alternative or a negation. If you antagonize him, all is lost. And all this with a patient who is sick! Surely the lawyer's cross-questioning of a witness whose feelings mean nothing to him is simple in comparison. Perhaps because of youth and certain personality traits, I occasionally find myself taking a history from a patient whose manner, probably aggravated by his illness, gives me an urge to poke him in the nose. You take histories from all sorts of people, people more clever than yourself and stupid people, garrulous and taciturn people, complainers and stoics. To do this you must acquire an understanding of the nature of the person as you are taking his history. And, as if all this did not make the task sufficiently difficult, it must be adroitly pursued while you are thinking of the differential diagnoses, recalling distinguishing points and making difficult judgments.

The final point in the importance of the history-taking is that it is always part of the therapy, sometimes the major part. It is the first impression you make. It is how you deal with this patient. What could be more important to him?

All this emphasizes not only the great value of the history, but also that constant thoughtful practice is the only way to learn how to do it. Your technique and skill should continue to improve for the rest of your life. Every opportunity to take a history should be a step up the endless ladder of the art, perhaps comparable to another rally in the lifetime of the professional tennis player. Seize upon it eagerly, realizing its tremendous value. This is not schoolboy stuff, not intellectual drama. This is real life as only the doctor is privileged to live it.

The plan of your history-taking may be changed to suit your needs and experience. There is a very valuable outline widely used in Toronto's medical school, printed by the University of Toronto Press, and commonly called "the green book".[1] The main headings in this are so standard that I believe a great deal of time can be saved by omitting or abbreviating them. This is a matter of personal taste, but surely the record should be concentrated on the most valuable information. For example:

Thomas Jones, 48

contains as much information as

Name—Thomas Jones
Sex—Male Age—48

Headings such as Chief Complaint and History of Present Illness can be abbreviated to C.C. and H.P.I., or even omitted; but, no matter how headed, these subjects must be taken up in distinctly set apart divisions. I try to use words accurately and to avoid ambiguity, but do not necessarily attempt to construct sentences for everything. There is no need for repetition: if you enquire into weight change in the history of present illness, do not record it under General and Gastrointestinal also. You haven't time; the observant reader will find it, and will pay more attention to it if your history is brief.

[1]Outline for History Taking and Physical Examination: University of Toronto Press.

Under General Information the date of taking the history is vital; in reviewing files it is one of the most aggravating omissions commonly encountered. There seems to be little point in listing marital status, occupation and race here, as these are almost invariably dealt with at greater length in Personal History.

The Chief Complaint must be brief, a few words, possibly the patient's own, and a time factor.

The History of Present Illness is the chief work of your history. It should contain every relevant point about the disease and how it affects this patient. You should read up the disease and return to ask more questions that will occur to you with study and thought. I do not attempt to stick to a chronological order for everything, but rather try to organize the facts into a diagnosis. For example: if it appears to be a disorder of cardiovascular function, every question regarding this system should be asked and the answer noted here. There should be no heading Heart in the functional enquiry for that patient. If the present illness appears to involve more than one system, the history is usually more meaningful if each system is placed in a separate paragraph and fully dealt with there. If there are some isolated symptoms that do not appear to fit or are not understood, they must be noted, but this can be done at the end of Present Illness. If the history is obtained from a patient who is unable to co-operate, note the difficulties. If a history is obtained from different sources, place this information in a separate paragraph and clearly indicate the source. Although you describe the entire illness from its onset, you must enquire into exactly what brought the patient to the doctor or the hospital at that particular time. The history of present illness is where the finesse of getting facts is needed. For example: When the patient says "a long time", you know this is meaningless yet cannot tell him that in so many words. If you say "ten seconds or ten years?" he may feel insulted, and you have lost the play. If you say "two or three years?" he may say "yes" to please you or to save himself the trouble of recalling. It may be necessary to say, "I realize you can't immediately recall the exact details but it would help to know if it would be a matter of months or years", (adjusting the example to what would be reasonable for the complaint, such as seconds or minutes for recurring abdominal pain). He replies "years" or "a few months", and you counter with "three or four?" or "eight or nine?" The extent to which you push this sort of enquiry will depend on many factors, such as how much practical help the exact time gives you, how sick the patient is, how accurately he appears to be able to recall. Whether the patient can or can not exactly place the onset of a symptom tells you much about that symptom: it suggests how suddenly it started, how severe it was, and how much it meant to the patient. Your attention and interest in his answers will draw forth greater efforts on his part. In approaching patients you will find many who are too ill to give detailed histories and some who just do not want to bother. There is no way of altering the fact that the patient is ill and that you may be "just the student" and second (or fourth) enquirer, and not *the* doctor really responsible for him. Of course you adjust your demands to the situation. If the patient is orthopnoeic and cyanosed you feel his

pulse and ask him to put out his tongue — you are really observing him closely. You quickly look at his neck veins, feel for the apex beat, percuss his axillae and outline his heart, listen over the front and sides of the chest, feel for his liver and press the important sites of oedema collection; all this can be done without disturbing him. When the patient sees that you are considerate and know what you are doing, it is surprising how much information he will give to help you. Ask what you feel justified in asking at that particular time. You have learned what can only be learned by handling the patient when acutely ill and have established good rapport for your return that afternoon or the next day. The ease and skill with which you take the history means not only that you ask better questions, but that you receive better answers from the patient. You have his confidence and you are enabled to help him more by making a better diagnosis. Though this must be acquired by practice, you can have such questions as: What kind of pain? Where? How big? How deep? Continuous or intermittent? Aggravated by? Eased by? Any associated symptoms? etc., learned by rote and at your tongue-tip. These aspects are enquired into innumerable times. They must become almost automatic so that you ask them with no effort.

It is much more difficult to remember all the manifestations of a disease or of disorder of a system while actually taking the history from a patient than it is to recall the same details to answer an examination question. Your knowledge of the symptoms of diseases should be so thorough that you enquire into these details almost subconsciously. It is a way of thinking that comes only with experience. This is why your work on the wards—on your own—is the most important part of your undergraduate course. Your teachers can suggest and criticize, but you must do the job. Great indeed is the University that can accomplish this step in learning, and a University is only as great as its students. All of us have been beginners and we realize that, for many, there is almost a mental block when, alone, they confront their first real live patients. This quickly disappears with practice and the acquisition of skill. The interest of medicine becomes tenfold as one changes from a thinker to a doer, from pathology to patients; it is the greatest but the most difficult step because *you* must take it by yourself.

The Functional Enquiry must be brief. It should not contain a great many negative or normal observations; recording all the questions in the "green book" is to be abhorred. Some judgment is required to know the common symptoms of disordered function of each system; if these are absent, the details can be omitted. Furthermore, these can be recorded in the briefest fashion possible. An example for the case where there is no cardiovascular or respiratory disorder: "Chest—no cough, hemoptysis, pain or other distress. C. V.—no dyspnoea or oedema". A positive statement of exercise tolerance such as "hurries up 2 flights of stairs readily" is even better than "no dyspnoea". When enquiring about chest pain you should also ask about pleurisy, pain from the heart, palpitations, and other forms of distress in the chest. These specific questions and associations asked in the layman's language, sometimes remind him of symptoms that he might otherwise omit. A brief recording of the data in

technical terms as exemplified above gives time to ask the questions. More detail is asked than recorded. However, judgment is still required to avoid asking unnecessary details in the systems that appear normal. Some sections in the "green book" are intended more as a guide where there is disorder. Although there may be something to be said for writing out the fuller form of questioning in your histories as a way of learning it, I would suggest that it is easier to write than to do. Concentrate on doing.

When symptoms that are part of the present illness are found in functional enquiry, they should be placed in the History of Present Illness. Other unrelated illnesses are described carefully here, but there should be no repetition of the Previous Health section. Some people are ready complainers and here is a chance to learn this. It is often a help in assessing the complaints in the present illness. Furthermore, here are elicited symptoms of which anxious and nervous people commonly complain—dizziness, fatigue, sighing respirations, palpitation, indigestion, etc. Of course each of these should be analyzed carefully to establish its cause, and they must be noted because of the help they give in understanding the patient. He will tell them to an interested physician asking about his various organs more readily than if he suspects enquiry is being made into psychiatric aspects.

The Previous Health is the most abused section of the routine enquiry, often even headed wrongly. Yet I believe that next to the history of present illness it is the most valuable. Let us clearly understand its purpose.

If you are going to pay anything more than lip service to the psychosomatic concept, to the patient as well as to his disease, this is your golden opportunity; and you cannot be a good doctor without such consideration. Here is where you establish your understanding of the patient's share of vigor and how he responds to life's blows, thus helping to gain the best insight into what sort of person he is. You will learn much that an obviously psychiatric interview may fail to uncover. Begin by asking directly about previous illnesses, many having been dealt with already in the Functional Enquiry. However, a little association is a great reminder. The technique of this is to enquire into the personal history simultaneously. Much more will be learned about both, often much more than even the patient realizes. A chronological enquiry is best. First ask the patient if she has been told anything about her birth and infancy. Perhaps you will learn that she was a hypertonic baby, although that has not been a fashionable diagnosis for long. Does she recall ever being sick in bed in the pre-school years? ever been seen by a doctor? any enuresis, night terrors or fits of temper? Each era in the patient's life is gone into carefully regarding not only any sickness or trips to the doctor but also how she felt generally, as indicated by how active she was and what she accomplished or was limited in. All through life we are sizing up people, our relatives and friends, our associates at work and at play: this plays an important part in how we get along in the world, no matter what our work is. These assessments are often subconscious, made on the basis of many impressions such as appearance, dress, voice, interests, responsiveness, knowledge, intelligence, judgment, etc. Some are endowed with the knack and may

become very expert; we all must practise and try to improve. Even with the insight of a Shakespeare, one can still know the patient better by enquiring into his past.

The second great value of this section is the opportunity to increase your medical experience. We are all young in the life of the art. Here is your chance par excellence to learn about the outcome of many illnesses which, otherwise, can only be gained by many years of observation. Many students' and internes' entire medical experience is gained in a large teaching hospital. The patients admitted are selected and usually have major illnesses and illnesses requiring difficult therapy. However, from their previous illnesses, one learns that a great deal can be learned about the symptoms, effects of treatment, and course of those disorders that will form the greater part of one's practice. It is important to enquire into the symptoms of these other illnesses in sufficient detail to satisfy yourself with their diagnoses.

The third feature of this section is the only one that is observed consistently and yet is certainly the least worthwhile. If you discover an illness that has significance regarding the Present Illness, you will deal with it there. If the present illness is, for example, one of the acute exanthemata, you will establish those the patient has already had in the history of Present Illness. I can see little or no point in recording a list and dates of acute illnesses from which the patient has recovered completely, often accepting his word for the diagnosis or, worse still, what he thinks the doctor thought it was.

A good deal of the PERSONAL HISTORY has been taken with the history of previous health and may be recorded there, or here, whichever proves clearest and briefest. One of the important points in good history-taking is versatility. You must be able to strip your record of apparently unrelated features to their barest essentials but, at the drop of a hint, you must go into the greatest detail so that its true significance may be learned and recorded. This is particularly important in the personal history. For example: it is always necessary, even in the case of a simple fracture, to note the setting in which the patient became ill, what sort of home he will return to, what responsibilities he has, who is paying his medical bills and what financial impact they may have. The patient's job and what he actually does there must be known. By this stage of the history the importance of the so-called functional aspects, the patient's personality and way of responding will be evident. This will determine in what detail it is necessary to get to know this patient. Can the complete history be taken at once, or will several interviews be necessary? Can it be taken on the ward, or will you have to see the patient privately the next time? Because a student takes only two or three histories each week, he has unlimited time, giving him a great advantage over the doctors. You may, through time and interest, get to know the patient better than anyone else. Make full use of such opportunities to acquire skill in this very important aspect. You will be amply repaid.

In the FAMILY HISTORY one wearies of reading:

Father—died of old age at 88

Mother—died at 63, cause unknown;

and, similarly, a long list of siblings. Often this is followed by denial of such diseases as hayfever, asthma, migraine, cancer, tuberculosis, etc. In most cases

the information desired is that regarding the disease, or diseases, from which the patient suffers. Was he exposed to it by heredity, or by environment? in relatives or associates? This may have been noted in the History of Present Illness. If it has and the problem is simple and largely organic, the family history section can be omitted. It is often revealing to enquire about relatives that have died while still young; hereditary factors then seem more significant. The loss of a parent in childhood or a broken home is momentous. In other cases, if it is of considerable importance to know the patient's nature, it is important to know the nature of those who have most influenced him by their germ plasm or their presence. Were they crazy, or just queer? What was the patient's attitude toward them? Whom does he consider that he takes after? Eliciting such information requires time and skill.

I would like to mention a few points that are applicable to the recording of the PHYSICAL EXAMINATION. One sometimes hears a slightly skeptical reference to "those long medical histories". It should now be obvious that the recorder shows poor judgment and inability to think precisely if irrelevant parts are long. One might enquire as to why the functional enquiry and routine physical examination are recorded at all. If your history form was perfected and standardized, you might omit all negative information. You would then conclude that everything in your particular routine that was not recorded was investigated and found negative or normal. However, your knowledge and interests are always changing. For us who are just beginning to learn the art, it is especially valuable to practise thoughtfully picking out the important features to record as concisely as possible. The better we learn to do this, the better we will be able to take histories for the remainder of our lives. Good histories will be a major factor in our success with patients. Further, we have a debt to the records we make. This is particularly true in a group or institution if the records are to be of value once the acute episode is ended. Where different people are working from year to year it is necessary to record more.One experienced physician who knows his routine, his interests, and that only he will be using the records may be able to omit many negative findings. It is surprising, however, to look back on your own histories of a few years ago and realize how much you have forgotten about those individual patients. Sometimes you feel that you really did not know anything at all about medicine at that time—this may give you the impression that you do know something now. But it is very satisfying and helpful when you find that you had then considered systems that only now have become involved, and had recorded their condition.

In spite of the philosophical argument to the contrary, I use the word normal. Everyone realizes that it must mean within the central part of the normal range. It is not necessary to describe the disc, arteries, veins, retina and macula in patients in whom there is no reason to suspect that they might be, or become, abnormal. Looking back at an early history of a patient who now has retinal degeneration, to find the statement "fundi normal" greatly increases the probability that they were examined and that there were no lesions at that time. On the other hand, to say, "Heart—rate normal, rhythm regular" is inefficient when you can record

quantitative information in even less space; "Heart—80, regular" conveys the facts. Another example: "Chest—movement good, equal, percussion and auscultation normal", is adequate if history points to no disorder here. There is no value in recording a purely differential point such as tactile fremitus. It is surely worth testing objectively and recording the major function of important special senses, for example: "Eyes—reads newsprint with each; Ears—hears whisper at three feet with each." With thought and practice it is amazing how much valuable information can be packed into a very brief record.

SUMMARY

1. Learn the art of taking histories by taking them.
2. Learn everything you can about diseases from your patients.
3. Learn about the patients with the diseases.
4. Be versatile: the greatest possible detail where relevant, the essential facts briefly recorded elsewhere.

SPECIAL INTERNESHIP

ARRANGEMENTS are being made for special interneships designed to prepare doctors for general practice. These interneships will be limited to three in number for the hospital year beginning July 1st, 1951.

The program includes four months in Paediatrics at the Hospital for Sick Children, four months in Obstetrics and Gynaecology at the Toronto General Hospital and four months in Medicine at the Toronto General Hospital, Wellesley Division.

These interneships are being offered to doctors who have completed at least one year on a rotation interneship. Application should be made immediately to Dr. R. C. Dickson, Wellesley Hospital, Homewood Place, Toronto.

FEATURE

A REAFFIRMATION*

E. P. SCARLETT, B.A., M.B., F.R.C.P., F.A.C.P.

IT IS FITTING that I begin by saying how much I value the honour of addressing you this afternoon, the more so when I remember the men who have stood in this place on similar occasions in the past, a reflection which reminds me that I am in need of special indulgence from you on at least one count—I am merely a practicing physician and come to you trailing no clouds of academic glory.

I am aware of how fleeting a thing is a graduation address. To each of you this occasion is of infinite personal significance hardly to be disturbed by anything less than the thunders of Sinai. To those of your families present it is hardly less so. You all stand on the very top of a golden hour. To the Faculty ranged behind me this ceremony is eloquent with the accents of tradition. And I venture to suggest that there is still another group that we should remember—we are at this moment surrounded by a "cloud of witnesses". I fancy that I can see over the shoulder of each of you a long line of ancestors—some of them graduates of this University, standing proudly and stoutly saying, "There's stuff in the lad", or "There's stuff in the lass".

With these thoughts in mind I should like to find the words by which for a moment I can penetrate the aura that surrounds each of you and find myself worthy of a personal word with you. To this end I must rely as best I can on Plato's divine element in the world, the power of persuasion. For in its essence a convocation address is a charge, a briefing before starting on a long and incalculable journey. You are young. For those of us who are older, our trust is in mercy. Yours is in hope. You are erect in the saddle and the rising sun casts your shadows westward. Before you ride off on the endless adventure may I, so to speak, stuff a few words into your saddle-bags. They are little more than a statement of the credentials of your calling, an assertion of the "faith and fire" that is within you. I have by way of title labelled them *A Reaffirmation.*

Many of you are veterans of the last war and all of you have been touched by war. It is here that I may find common ground with you for it was my privilege to be a member of the Returned Soldiers' Class which this University sent out into the world of Medicine twenty-six years ago. At a recent reunion of that class I noted that the rallying point was the singing of the old songs—"It's a Long Way to Tipperary", "The Long, Long Trail", "Keep the Home Fires Burning". These melodies for one generation at least held the memories and emotions that could not be put into words. They reminded us of the glory and tragedy and above all of the pity

*Convocation address to the Graduating Class of the Faculty of Medicine, University of Toronto, June 16th, 1950.

which war distils. To you with different experiences, but of the same breed, I do not quite know what custom and memory will seize upon as symbols, but I can tell you that whatever they are, they will do much to sustain you through the dusty years. War does help us to develop personal munitions of fortitude. In its grim school, if he is worth his salt, a man does learn the grace and courage to do his duty. This must have helped you in your medical course, for, if you are like we were, you have found medical study a stern affair. What other qualities we may have in common I cannot tell. But I do know that our crowd were on some occasions impatient rebels, they were also literalists, impressed with the stubborn logic of observation which our teachers constantly impressed upon us. As an instance I remember that in a final oral examination one of our number was put the following question—An unconscious man is brought into your office on College Street with the story that he had been telescoped between two of the new red Toronto street cars which had at that time just appeared on the streets. On examination you find only one thing—a red stain on the inner thigh. What is the diagnosis? The examiner, hopefully waiting for the answer—a ruptured urethra, was stunned to get the brisk reply—"That red stain, Sir, would be paint off the street car". There spoke a young realist, scorning the poetry and conventions of surgery and urology. Well, returned soldiers or veterans or whatever you may call them, have their virtues, and I hope that you are rich in them.

Today you are graduates in the learned and liberal profession of Medicine, doctors of Medicine, exponents of an ancient and honourable art. We welcome you because this country is in need of doctors. But that welcome has deeper overtones. For Medicine not only requires increased numbers in its ranks, but is in dire need of persons of high ideals and character. The necessity of strengthening the foundations of Medicine was never greater than today when we are being swept along on a flood spate of new knowledge, new techniques and a new social organization. The broad, liberal and humane traditions of our profession must be defended against the increasing threat of narrow specialization and the pervading materialist dogmas of our time. It is here that we look to you for reinforcements. I hope that you will bring us many qualities. ENTHUSIASM first of all, the wine of the temper of youth. We oldsters want that. IDEALISM: unlock some of it for the profession. There is no sadder spectacle in Christendom than a disillusioned doctor. Your ideals will make you fiercely honest in practice in the light of your medical beliefs. Too much base coin passes for legal tender in Medicine today. Indeed the sin against the Holy Ghost in the practice of Medicine for which there is no possible forgiveness is doing what you cannot reconcile with your intellectual lights and the best traditions of the profession—prescribing something that you know is worthless, operating without due reason, carelessly brushing aside with some technical jargon tired people who have been bruised hard by life and whose minds have been beaten thin by worry. COURAGE: the world just now is bowed down by fears and paralyzed by the mutterings of the prophets of approaching doom. All seem to be hurriedly building dikes against disaster which are labelled Security. Surely no one better than the

physician whose business is with the mysteries of life and death must know that this thing called security is elusive and unattainable. In the words of the Zen Buddhist poem: "You must know that the fire which you seek is in your own lantern". Your courage and faith and common sense will do much to unmask this marauding catchword—Security. The willingness and ability to work: Carlyle's gospel of work is never out of fashion in the practice of Medicine. By this I mean taking what material is available and working like beavers to give it shape and sense and use and satisfaction. And IMAGINATION: how sorely we need that in Canada! There are ten thousand things waiting to be done in this country for want of imagination and its creative urge. And in the course of practice you will find that most of the human family whom you will meet are bored for lack of imagination in the high art of living. It may be true as Thoreau says that the mass of men lead lives of quiet desperation, but you can still help their lot and endow their world with some sweetness by a touch of imagination and sympathy.

It has been said that imagination was given to man to compensate him for what he is not, and a sense of humour was provided to console him for what he is. And if we are to believe the commentators on Canada, we need the blessed endowment of a SENSE OF HUMOUR. As Mark Twain has told us, laughter is the most successful weapon against the depravity of the human race. It is a blessed attribute in the medical world. For one thing it enables you to rise above the minor damnabilities of practice. In the daily medical round Time will growl and scratch at you like a hungry dog, and the sanity of humour will help you to keep it at arm's length.

And finally I hope that you will bring into the profession a SENSE OF LOYALTY—loyalty to your calling, your medical colleagues, your patients and loyalty to your convictions. It is the cement that holds our society together, and in this time of "the breaking of natians" it is a priceless quality.

These then are some of the attributes with which we hope that you will reinforce our medical ranks. If you embody them, in time to come you will have paid yourself the grand old Carthaginian tribute of your fellows "vehemently desiring" you on the day of battle. And at the same time you will have achieved the full stature of a great physician who possesses infinite resources against outward circumstance and commands an inner calm under the weight of the greatest storms without.

* * *

I say these things to you who are entering the profession today because after twenty-five years in practice I have a great pride in the body of men and women who are physicians. I have known doctors of all kinds and in all conditions, and, by that special dispensation that is given to our profession, few were not touched with grace before the Lord. For the blessings of medicine are many and great. It is the most ancient of professions, being older than Christianity and antedating the inception of civil law. With the ministry it stands closest to the secrets of eternity. Its essence resides not in technical skill nor scientific excellence, but in the untiring desire to relieve human suffering and in reverence for life. These have always been its watchwords, constituting its cloud of smoke by day and its pillar of fire by night. Material things in Medi-

cine are superseded, the spiritual things are not, and in an age numbed with change and confused with uncertainties, this is important and even consoling to remember. This close touch with humanity will keep you wholesome and humble. For it is ever our high office as physicians to

"take upon us the mystery of things
as if we were God's spies."

But you say that is all beyond my hope of attainment. Do not believe it for a moment. There are plenty of niches in medicine and if you fail to find one you are a very dull dog indeed. Many of you will shortly break through your educational shell and be a dazzling surprise to yourselves and no less to your teachers. There is no profession in which such surprises are more likely to happen. This is because no other calling offers greater opportunities for the expression of character and personality. It is just now the fashion to stress degrees and technical training, whereas in practice it is your personality that will count. That is not to belittle knowledge but is only another way of saying that your reach must exceed your grasp. Whether you propose to be a physician, that is one who knows a lot and can do very little, or a surgeon, that is one who can do a lot but does not know too much, be assured that the mills of medical justice grind finer than the mills of any other profession.

Your education and essential growth really begin after graduation. I recall that when I graduated I had the idea that medical practice consisted mainly in acute osteomyelitis and rheumatic fever. I found to my dismay that it really meant boils, sore throats, lame backs and most of all, tired, harassed people. In these matters be sure that you understand your relation to the public. A physician is not just a commodity to be ordered about at will. In spite of modern scepticism, in the minds of the public you are the lineal descendants of the priests of Isis, endowed with the divine power of healing. Kings have lost their healing touch and the waters of Jordan no longer make a man whole again. Confidence, however, in medical science is the modern substitute for faith in magic and the waters of Jordan. You, the modern doctor, represent this power of medical science. Each physician thus wears the mantle of Elijah and he must be worthy of the faith which is reposed in him.

And do not be disturbed too much about the social changes in which the profession of medicine is just now being involved. It is well to remember that common sense and a respect for realities are not less graces of the spirit than zeal for medical tradition however virtuous. The paroxysms of righteous fury with which some medical leaders denounce each new announcement of government encroachment into ancient medical territory as another work of the devil disables them from further strategy and relations. An obstinate refusal on our part to revise old formulae in the light of new conditions only exposes us to further attacks in which the whole fabric of medicine will suffer. It is our job to help governments to keep the ring decently and to strike a more just balance between the claims of sentimental humanitarianism and those of future generations. In the last analysis medicine will survive only by its vision and the values that it cherishes.

And, similarly, being young, you will not be too distressed about the state of the world. It is true that we are living

through one of the most violent periods in human history. But concern over the condition of man neither begins nor ends with the atom bomb, and it is not yet "closing time in the gardens" of Western civilization. If you are wise, in such matters, you will be what George Eliot called a "meliorist"—a believer that the world can be improved and is perhaps slowly improving, though with a very strong conviction that the obstacles are enormous and the immediate outlook not specially bright.

I hope that you will choose to live and work out your destiny in Canada. This country — our country — is now slowly emerging from its old tradition of security in isolationism. It is now coming of age in science no less than in literature, music and art. It is the business of your generation to bring it another step to maturity and to give this nation a robust pride in our past and in our present accomplishments.

I said something about loyalty a while ago. I hope that you will have acquired a loyality to this—your University. It is an honourable bondage. From this day forth you are part of the intellectual and spiritual community of a great school. Men from this Faculty are now part of the Valhalla of Medicine. Speaking to you as one of the generation whose masters were Cameron, Primrose and Starr, McPhedran, Graham and Oille, McMurrich, Mackenzie and Klotz, I can say to you that ours is a great heritage. And some day when you come to unpack the luggage of your memory as I am tempted to do today, may Varsity associations be among your most precious possessions!

* * *

I have spoken much and yet come short. May I give you this final word. As physicians it is your part to give suffering mankind confidence, to supplement by some mystical spiritual reinforcement which their bodies claim from science that invincible courage which is the most miraculous attribute of human nature. It is at this point that the small sphere of scientific medicine ends, and the larger age-old healing ministry of medicine in its highest forms begins. In your mission you do not travel alone. The whole army of medical science is with you. You face life not as beggars but proudly bearing gifts. Let good sense and fidelity and charity be the coin of your realm and the hosts of a warring world shall not prevail against you. We can wish you no greater blessing than that which your profession will bestow upon you in the measure of your capacity, your industry and your ideals.

Each of you now has an appointment with Destiny. In the name of the University and the Faculty of Medicine I wish you Godspeed, and in God's good time may each of you be brought to a fairer place than even this Varsity on this June afternoon.

A PROBLEM IN DIAGNOSIS

R. D. ATKINSON. 5T1

PRESENTATION OF CASE

J.D., A SIXTY-NINE YEAR OLD male, was admitted to the Medical Service of St. Michael's Hospital on 15th February, 1950. His presenting symptoms were melaena for one week and haematemesis on one occasion five days prior to admission.

Good health had been enjoyed by the patient prior to admission. At that time he began to pass black tarry stools two or three times a day. This was accompanied by loss of appetite, nausea, and on several occasions vomiting. Five days ago a small quantity of dark and red blood was observed in the vomitus. He was seen by his doctor at this time; bed rest was prescribed. Until the time of admission he felt ill and faint, although during the interval the vomiting stopped and his appetite improved.

There was no history of indigestion, nausea, or other epigastric distress. Previous to one week ago there had been no change in bowel habits. There was no history of jaundice.

Examination on admission revealed a pale, moderately well nourished elderly man. He appeared chronically ill. Temperature was 98° F.; pulse 84 per minute; blood pressure was 120/60; present weight was 112 pounds, usual weight 135 pounds. No abnormalities were found on physical examination.

Laboratory examination revealed a normal urinalysis; a haemoglobin level of 58%; a white blood count of 10,400; a red blood count of 3.2. The blood film was in keeping with that of acute blood loss. A stool sample gave a positive Benzidine test. Total serum protein value was 3.8; serum albumin, 2.8; serum globulin, 1.0. Van den Bergh values were within the normal range.

Gastric series were done. The first set revealed no definite abnormality. The second series showed a small active ulcer centrally placed in the duodenal caput. There was no evidence of gastric ulcer or gastric carcinoma.

SUMMARY

A sixty-nine year old man presents with a history of melaena for one week and haematemesis on one occasion. This was accompanied by general malaise, faintness, nausea and vomiting. There was no history of similar episodes previously, or of epigastric distress. On examination, except for pallor and weight loss, no abnormalities were observed. Haematological values indicated acute blood loss. The plasma protein levels were reduced. Radiography with barium series showed a small ulcer in the duodenal caput.

DIFFERENTIAL DIAGNOSIS

At the time of admission we are presented with the problem of diagnosing the cause of melaena in a sixty-nine year old man. Melaena is defined as black tarry stools that result from haemorrhage into the alimentary canal. A volume of 100-200 cc. of normal blood is necessary to produce melaena. The ingestion of iron, bismuth, and certain

foods results in black stools, but they lack the tarry sheen of melaena.

The possible causes of melaena to be considered are:

1. Duodenal Ulcer,
2. Gastric Ulcer,
3. Cirrhosis of the Liver,
4. Carcinoma of the Stomach,
5. Swallowed Blood.

Duodenal ulcer is the most likely diagnosis as it is the most common cause of melaena. Melaena is frequently the presenting symptom rather than haematemesis, which occurs rarely. The absence of previous symptoms is not rare. The usual symptomatology is that of epigastric pain generally midline coming on two or three hours after meals, and relieved by food or alkali.

Haemorrhage from *gastric ulcer* commonly manifests itself as haematemesis before melaena is observed. In the greater percentage of cases there is a history of epigastric distress preceding the haemorrhage.

In *cirrhosis of the liver* the haemorrhage is more apt to result in haematemesis. Slight jaundice is usual. On examination the spleen and the firm edge of the liver are palpable. Ascites is common.

At a time when we are taught to be cancer conscious we must consider *carcinoma of the stomach,* if but to rule it out. Gastric carcinoma leads to melaena only rarely. As a rule it causes less profuse bleeding, and leads to occult blood in the stools. The absence of epigastric pain or discomfort, debility and weight loss makes carcinoma unlikely.

Swallowed blood arising from haemoptysis or bleeding from the mouth or nose may result in melaena. This is excluded by a careful history of the incident, by an enquiry for previous attacks, and for symptoms of pulmonary disease. The gums, nose, and chest should be examined.

In some cases the diagnosis will not be made on clinical grounds alone, and a barium series must be done. In cases where carcinoma is suspected, repeated series must be carried out repeatedly before it is dismissed.

ACKNOWLEDGEMENT

It is a pleasure to acknowledge the valuable assistance of Prof. R. F. Farquharson during the preparation of this report.

SOFT TISSUE INJURIES IN THE LIMB*

SIR REGINALD WATSON-JONES, F.R.C.S., M.Ch. Orth., B.Sc., M.B., Ch.B., M.R.C.S.

I AM VERY GLAD that the first of my duties as the Arthur Sims Commonwealth Professor of Surgery, and since about an hour ago, as Visiting Professor of this university, should be to address you. In thinking a few days ago of what I should speak, I wondered which of the five or six hundred lantern slides that I brought to this country I should use and I decided finally that I would not use any lantern slides, and I have come here with none, and that was quite deliberate. I think that in this age there is a danger of undue reliance on the results of laboratory tests and investigations and special examinations. We are tending to reach a stage when our first contact with the patient is when he has already got about sixty sheets of investigation and we are only able to look at him, as a problem, through those sixty sheets. We tend to regard the results of laboratory investigation as quite infallible. What if the patient's blood sedimentation rate is 30 mm? It means an entirely different thing if it is in a child than in a man, and it means an entirely different thing if it is in a thin man than in a fat man, and quite a different fact if it is in a patient who has recently had pneumonia than in one who has not. I always deplore the danger of thinking that these are the facts, whereas the results of our investigation of clinical history and illicitation of clinical science are not facts. I would suggest that we should stress a little more thought on the history and background of the patient. It is much more important at the time whether he is married or not and whether he is at work or not, and if so, what sort of work, than it is to know what his blood sedimentation rate is. It quite often has a much more profound bearing on treatment.

THE USE OF X-RAY

Similarly in the treatment of fractures, we are inclined sometimes to say that the X-ray is the fact, and that is what matters, and to base our treatment of the fracture on the X-ray appearance. Nevertheless, it is very common to find a patient with a limb, the X-ray of which is perfect, and the function of which is deplorable; and the converse can be true. In certain central fracture dislocations of the hip, the X-rays are terrible but the foot action is excellent.

In fracture treatment we must place due emphasis on all parts of the limb and indeed, on all parts of the patient. We must, of course, use X-rays as a necessary part of our investigation. If we are going to treat a dislocation of the elbow, it is most important to know whether it is associated with a fracture. The whole result will be ruined if we fail to recognize that the internal epicondyle is on the under side of the elbow joint. I saw a patient who had a scar on the under side of his elbow; he said, "Yes, it was operated on, and the head of my radius was taken out." "My dear fellow, you've got the wrong side of the joint. You mean the internal epicondyle." "No, head of the radius." I said, "Your anatomy is wrong. That can't be head of the radius. That is the internal

*Revised and edited lecture delivered to the final medical year, February, 1950.

epicondyle." He put his hand in his pocket and pulled out the head of his radius! It had, of course, been a medial dislocation of the elbow joint, with a fractured head of radius, and the head of the radius was left stranded on the inner side when the dislocation was reduced, a fact and observation which would be difficult to clear without an adequate X-ray.

Take an example of a dislocation of the hip joint. The patient has a sciatic palsy associated with this dislocation. One reduces the dislocation and on clinical grounds alone you might say that is all that is needed, but if the X-ray shows a large acetabular fragment tilted out sideways, then it as a hundred to one that the sciatic nerve is impaled by that point at the marginal fragment, and it is an urgent indication for operative replacement in order that the sciatic nerve lesion should have a chance of recovering. We must use X-rays, but we must let them be our servants, and not our masters.

CIRCULATORY DISTURBANCES

The soft tissue reaction is very commonly more important than the bone injury. First of all, there is the general circulatory embarrassment: the impairment of venous return, arising from pressure within the fracture; planes of traumatic exudate and engorgement; haemorrhage, which impairs venous return, and therefore an increase in swelling distal to the fracture. Our primary treatment must be based on the knowledge that it is going to swell so that we should defer the application of an unpadded plaster until that reaction has subsided. In this first stage, use either a very well padded plaster or even a half-plaster (certainly a split plaster) and then elevate it; and after the reaction has subsided and the swelling gone, then maybe a closely fitting unpadded plaster.

Active Exercise

There is the urgent indication for active exercise. I discovered that toes suffer in leg and ankle injuries, just as much as the fingers in wrist and forearm injuries. There are few surgeons today who fail to get after the patient with a fractured wrist and make him exercise his fingers a little bit from the beginning. However, there are many who think that the toes can look after themselves, and who maybe use a platform which is supposed to prevent toe-drop but produces an even worse thing, which is rigid clawing of the toes after which the patient can only walk on the metatarsal head as if it was a stone under his foot, and has a disability as prolonged as the disability from an ununited fracture.

Early active exercise is necessary, not merely to prevent stiffness of the joint, but also to promote a normal circulation to the extremities, and that is why it must be active exercise and not passive movement. Passive movement does not do what we want. It does not assist and stimulate the venous return. On the contrary, it has exactly the opposite effect to that which we intend. The only indication for passive movement of joints arises when the limb is paralysed so the patient can not move the joint himself; in those circumstances gentle and careful passive movement is often required. If our purpose is to prevent stiffness, then the one way not to do it is to stretch the joint passively. It will increase the stiffness, and for that reason I never send a patient with a fractured

wrist and early stiffness of the fingers to a Physiotherapy department, facing the physiotherapist day after day after day with the problem of this half-stiff finger. The temptation to push is so great, that I do not think they ought to be faced with the temptation. Perhaps that is putting the point a little strongly. Nowadays the physiotherapists realize the dangers of joint stretching, but not all of them have abandoned this harmful practice yet, and neither have all doctors.

It is rather generally recognized now that this is a harmful practice in the fingers, but there are still surgeons who will allow passive stretching of a stiff elbow, and there are many who advocate passive stretching of a stiff shoulder, and it is for that reason alone, I think, that the prognosis of stiffness of the shoulder from peri-arthritis is so generally regarded as very bad. It is for that reason why many surgeons are worried, when a patient has dislocated a shoulder, at the prospect of keeping the limb immobile for three weeks. They must start movement right away, when we know that movement of a recently dislocated joint impairs healing of the ligament and prepares the way for a recurrent dislocation. That is true also of a badly sprained ankle where the ligaments are torn. If it is not immobilized the patient will have a recurrent dislocation of the ankle. It is true of dislocation of the knee, of the hip, and of the elbow. It must be immobilized for three weeks, and there is no danger in doing so provided you are not frightened of the consequences. The only patients who develop permanently stiff shoulders after three weeks immobilization are the ones with whom the surgeon is so afraid of a stiff shoulder that he arranges for it to be passively stretched every day, and manipulated under an anaesthetic after a month, and then because it is not any better he re-manipulates it, and then re-manipulates it again, and every one of these is a new injury, a new trauma. It is true that they all break down adhesions, but in the breaking of the adhesions they produce a fresh serofibrinous exudate which is the glue of adhesions and, in the long run, produces more adhesions than were broken down.

The essential treatment in all of these stiff joints is the patient's own active exercise and that is where it is so important that we know the patient, and the patient knows us, and that we exert our influence over him. It is no use saying, "Go away and practice moving your stiff shoulder." He will not understand, he will get tired, he will give up. You must be after him, urging, pressing, stimulating, encouraging, day after day after day, making sure that he is doing the right sort of exercise, and is putting the proper amount of stretch into it, and that he is not losing heart.

We have practically given up the manipulation of a stiff knee. The only really difficult stiff knees are the ones in which the Quadriceps is adherent to the femur and those are the ones which, if you manipulate, you fracture the patella. After regular measurement, week by week and month by month, if we find that despite perfect union of the fracture there is still an important residual stiffness, if the patient is not recovering by his own movement, then we use gentle manipulation. If you insist on that indication for manipulation of stiff joints, you will probably manipulate about ten a year instead of ten a week.

Ischaemic Contracture

There are specific circulatory disturbances, of which the most frequently mentioned example is contusion of the brachial artery by the margins of a supra-condylar fracture of the humerus. I do not mean that the artery has been severed. It may be a simple contusion, giving rise to a vaso-spasm which extends far up and down the limb. I have seen two mal-united Colles fractures, which were subjected to operation with excision of the lower end of the ulna, develop full-blown ischaemic contractures with destruction of the flexor bellies of the fore-arm. The lesion in the artery is probably due to the fracture at the wrist and the vaso-spasm spreads back and is just as dangerous as if the lesion of the artery had been at the coronoid tuberosity. Remember the signs—pain, pallor, pulselessness, paralysis—that is the order in which we should look for them. If we wait for paralysis before we diagnose Volkmann's ischaemic contracture, we shall wait far too long. If we wait for contracture, an actual flexion of fingers, we wait until the whole process is finished and over and an irrecoverable lesion has resulted. The diagnosis must be made at the latest within six hours, so that action can be taken within that time. Muscles can stand loss of their blood supply for three hours. They can stand incomplete loss of blood supply for a longer period, but if we should pick an arbitrary time limit, then six hours should be accepted. The first step is reduction of the fracture and the putting of the limb into such a position as to give the best opportunity for a flow of blood. In the case of the supra-condylar fracture, reduce it by traction and then lay it on a pillow in a right-angle (even less) degree of flexion. If the circulatory problem is still there, take urgent steps for operation. Brachial block anaesthesia first may help. It is a useful anaesthetic for exposure of the artery anyway. I think we ought to be very ready to expose arteries which we suspect might be involved and when we are not certain of the diagnosis. If there is to be a mistake, let it be a mistake of exposing the artery unnecessarily, rather than not exposing the artery when it should have been exposed. Although radical in our indication for exposure of the artery, I think we ought to be conservative in our indication for excising it. Of course, if the artery is severed, there is no doubt that the end should be excised in order to give a complete sympathetic block. If it is merely contused I think it is becoming increasingly doubtful whether arteriectomy is the best treatment or not. The bigger volume of opinion approves the plan of exposing the artery, cleaning it with a moist gauze, with adequate decompression and periarterial sympathectomy. In a large proportion of cases the pulsation will come back and the disaster will be averted.

Of all the disasters complicating fractures, I do not think there is any worse than that of a fully developed Volkmann's ischaemic contracture. No matter what you do after it is permanently established, no matter what reconstructive surgery is attempted, the results are usually pretty bad.

Tourniquets and Pressure Points

We now know that the proximally spreading vaso-spasm may not only involve the whole of the vessels of the limb, but also extend beyond the limb,

so that a contusion of an artery in the lower limb may give rise to vaso-spasm extending as high as the renal arteries. This can account for that very extraordinary shunt of circulation from the glomerular part of the kidney to the medulla which has been the subject of important work in Oxford, and the limits of which are probably very great indeed. It explains the Crush Syndrome, the uremia that used to occur after patients were crushed under fallen buildings and masonry. It explains death after the use of a tourniquet.

I spoke of not sending a patient with a stiff elbow to a Physiotherapy department because the temptation to push him is too great. I would urge that tourniquets should not be put in the equipment of First-aid workers because the temptation to apply the tourniquet is too great. During the war I was in a hotel in Glasgow when a curious voice came resounding around the rooms, "barbara house, barbara house". It gradually became clear the voice was saying, "Is there a doctor in the house?" As a rule, when somebody calls this you get out of the way as quickly as you can. But this was a commanding call so I went to see if I could help. On the porch of the hotel was a man lying on his back, with his face absolutely covered with blood. He was looking slightly cyanosed, and kneeling beside him was a volunteer detachment worker. She said, "Oh doctor, I'm so glad you've come. He's got a gash across his forehead. I've got the pressure point." She had got him so tightly by the throat that she had very nearly throttled him.

If the poor wretched First-aid worker puts the tourniquet on too loosely, the patient is likely to bleed to death because the venous return has been completely arrested and the arterial supply not. I saw a child who was brought into hospital after a deep cut of the thigh. The child was just about exsanguinated and the only treatment needed to stop the haemorrhage was to take off the tourniquet. On the other hand, the tourniquet may be too tight, with contusing of the artery giving rise to vaso-spasm, uremia and death. The only danger, which does not really exist, is that the patient will bleed to death from lack of the turniquet. He will not, if the artery is completely severed. It is true that a side hole in a vessel can go on bleeding because the spasm can not cut it off, but if it is a complete severance, the patient will not die. There are many examples of men run over on a railway line and found eight hours later with an arm completely amputated, but not dead from haemorrhage. I think that we must arrange to do all that we can to provide just an inkling of the use of tourniquets to First-aid workers and concentrate on the application of pressure over large compresses at the site of bleeding.

NERVE INJURIES

With regard to nerve injuries that so often complicate fractures, we recall at once the initial contusion injury as the primary nerve lesion: the contusion injury of the radial nerve in the fractured shaft of the humerus; the traction injuries of the circumflex nerve in dislocation of the shoulder, and of the ulnar nerve on the inner side of the elbow when the fore-arm is carried out by lateral dislocation, and of the deep sciatic nerve in fracture dislocations of the hip; the contusion and traction of the lateral popliteal nerve in dislocation of the knee joint. As a rule, the primary nerve

lesions of civilian life, unlike the open wound, are incomplete lesions, and as a rule, recovery occurs without any necessity for nerve suture. There is the exception of the lateral popliteal nerve at the knee in which the stretching extends over so wide an area of the nerve that permanent paralysis is very common. But with primary nerve lesions associated wih elbow injuries and with shoulder injuries, nearly all recover by simple expectant conservative treatment. Delayed nerve lesions, occurring for the first time many weeks or months after fracture, are almost invariably due not to pressure of callus, but to the stretching of the nerve over callus by passive movement, or by stretching of a nerve which is partly anchored. The ulnar nerve is by far the best example of this, with fractures of the internal epicondyle, or the lower end of the humerus involving the post-condylar groove. There is callus there and the nerve has got so much mobility in the ordinary way that it can get out of the way of a slowly developing callus. On the other hand, if one start pulling and stretching the nerve and rubbing it to and fro over that callus, then a contusion injury will arise. If the elbow is stiff in this position, then the nerve is also stiff in that position. It is anchored down by adhesions, and one single forcible flexion under an anaesthetic is very liable to damage the nerve and give ulnar paralysis, so that for yet another reason, the passive forcible movement of a joint is dangerous.

Finally, to make the clinical picture complete, there are the tardy palsies occurring many years after injury. In a young child with an un-united fracture of the internal condyle of the humerus which failed to unite at the time the injury was sustained because the condylar fragment was turned right around, and the displacement was not recognized and corrected, one observes a fibrous union and then gradually the carrying angle increases and a cubitus valgus deformity develops. Still there are no complications or nerve injury, and soon the patient starts strenuous work, usually at the age of about eighteen or twenty, about fifteen years after the original injury. With the active strain of heavy work, the nerve is stretched. There is, normally, enough laxity in the ulnar nerve for it to be quite loose in the extended position, and only beginning to be tense in the position of full flexion, but all of that laxity is taken up by the increased carrying angle, and the nerve is approaching full tension even in extension. If he then flexes the elbow, the tension is too great and a delayed, tardy ulnar palsy arises.

During the last five or ten years there has been an increasing recognition of tardy median palsy due to compression of the median nerve in the carpal tunnel occurring twenty, thirty, even fifty years after, for example, a fractured carpal scaphoid. The fracture remains ununited, and in the course of years a secondary arthritis develops, with osteophytes, and the osteophytes so fill up the floor of the carpal tunnel that a nerve lesion results which responds very promptly to simple excision of the anterior carpal ligament. More recently still, there have been examples of median palsy occurring in the carpal tunnel without any bone injury, but simply from what is believed to be postural strain alone. In the dorsiflexed position of the wrist there is three times as great a tension within the carpal tunnel as in the palmar-flexed posi-

tion. In this position, where there is tension, the housewife commonly does her polishing and dusting; or else it may be a job that calls for gripping of tools in the dorsi-flexed position of the wrist. These people develop tingling in the median nerve distribution and perhaps a little motor paresis with complete recovery if the anterior carpal ligament is divided.

TENDON INJURIES

In the Colles fracture it is very important to keep a lookout for posterior marginal fragments of the lower end of the radius which may occupy the groove in which the Extensor Pollicis Longus tendon lies. In those cases, particularly if they are allowed rather early movement, the friction of the long extensor tendon to and fro over this roughened bed gives rise to a delayed rupture. Occasionally the flexor of the index finger or the Flexor Pollicis Longus may be ruptured by friction over osteophytes or exposed bone from one of the carpal injuries.

It is about the shoulder that I wanted to have a word or two. Supraspinatus tendon injury as a complication of a dislocation of the shoulder without any bony injury is still one of the more commonly overlooked injuries. In spite of all that has been written, it is still true that a considerable proportion of patients who have sustained a Supraspinatus tendon injury have, added to the physical incapacity, the psychological insult of being told that they are malingering. And it does sometimes look very odd. You ask the patient to raise his arm. He gets so far and he goes red in the face and nothing seems to happen. Then you take it for him and lift it and he promptly holds it easily. With nothing to show in the X-ray, nothing to feel, passive movement normal, you say he is malingering. Whereas, in fact, those are the absolutely typical signs of a fully developed tear of the Supraspinatus tendon. When he gets so far he screws up his face with pain, and yet when he is up there he has no pain at all. It is just in that middle third of abduction that the Supraspinatus insertion is tending to impinge on the acromium. In order to avoid impingement, they may abduct with a curious rotary circumduction motion and thus escape that scraping friction. All of these signs are easily understood when you think about the mechanics of the injury. Let it be clear that you do not, in many cases of Supraspinatus tendon injury, get anything like so clear-cut a picture as this. Many of them have no more than pain in the middle third of abduction, or some weakness of abduction.

The other tendon injury which I find is so very commonly overlooked is rupture of the tendo-achilles. They all give the same history in that they feel that someone hit them across the tendon, and they turn around to see who is hitting them on the back of the heel; or if they are playing golf they turn around to see who is overdriving. But that alone is not enough to make a diagnosis. You say you can see the hollow. Not at first, because it is filled with blood and oedema, so you feel it if you ask the patient to plantar-flex his foot and you run your finger up and down the heel cord. They can actively plantar-flex quite strongly by the Tibialis Posterior and the Peronei. It is true that if you hold the foot as they are trying to plantar-flex, you then realize that the pressure is going directly onto the forefoot and they are not really pulling up

the heel with normal strength. However, there is one sign that is very difficult to overlook, if you test for it, and that is an abnormally free range of active dorsi-flexion when the knee is straight. In this case, the tension on the calf is such that you can not dorsi-flex the foot normally more than about 20 degrees. If there is no tendo-achilles capable of offering resistance, you can easily dorsi-flex to about 50 to 60 degrees. These injuries should be sutured as quickly as possible.

Lastly, not because it has any relationship at all to fracture, but because it is a field of surgery in which such very striking progress has been made in the last decade, I thought I might discuss the matter of severance of the flexor tendons of the hand. There is the case of the flexor tendon divided within the tunnel between the distal palmar skin crease and the distal crease of the finger. A most striking and remarkable advance has been set recently in the surgery of their repair. Up until about ten years ago, the general conclusion was that the best treatment for a patient who had severed both tendons in the tunnel was an immediate amputation of the finger. Even with the most careful stitching there is not enough room in that tunnel for two divided tendons which are sutured, and heal with some fibrosis. Almost invariably the tendons become strapped down to each other and to the underlying bone and to the overlying roof of the tunnel. The finger is completely stiff (probably in a flexed deformed position), and sooner or later is amputated. The Profundus alone is a good enough tendon to do nearly all that you want with your fingers, so we divide the Sublimis and suture only the Profundus, and there is some improvement. Even then, the suture line being within the tunnel, a very high proportion develop adhesions, fixation, and a stiff finger. Today the treatment which is generally adopted is to resect both Profundus and Sublimis tendons throughout the whole length of the tunnel and to transplant one of the extensor tendons of the foot (fourth toe), suture it at the proximal part of the palm to the Flexor Profundus Digitorum, carry it through the tunnel and through its little fibrous bridges, and stitch it to the bone of the terminal phalanx so that there is no suture within the fibrous tunnel. The sutures are in the palm and at the bone at the end. This should be deferred until the wound is healed and the primary treatment should be no more than would ensure healing of the wound.

* * * * *

Have you ever asked yourself in which age of surgery you would have chosen to have lived? The age of anaesthesia?—that must have been a wonderful age, when anaesthesia was first introduced and the possibilities of surgery became so much greater than they had been. Or the age when the the nature of infection was discovered? — Lister, Pasteur. Or this age? I really firmly believe that the advance made in the last half-century, and the progress to which we can look forward in the next half-century, is such that never before could we say with more conviction, "this is the age I would have chosen"; and if we are to be given all of this free choice, I would have chosen to be useful in this age.

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EDITORIALS

A MATTER OF RESPONSIBILITY

Too few of us are aware of the privileges accorded us and the responsibility that we are obliged to bear. Even on the university scene, no other group enjoys the same benefits as we who are enrolled in the Faculty of Medicine. Moreover, and more important, no other group faces the weight of responsibility to mankind in general and to the stability of body and mind of our individual contacts in particular.

In many cases, we have the benefit of a background and environment of a superior quality and enjoy the privileges associated with this social sphere. Coupled with this, we are equipped with a mental capacity capable of handling the challenges of our chosen profession; or we would not have been permitted to pursue our training. Moreover, we are able to attend a Medical College of high caliber and gain not only excellent technical training but also a well-rounded education in the liberal arts. In this setting, we are permitted to utilize our fellow man as instruments of learning, and thus indulge the privilege of working with cadavers in the dissecting room and living, feeling patients in the hospital. Finally, in all our training we are aided by the government in a financial way; and this aid is considerable, and in excess of that received by other students. We must realize that the privileges exist. We must not abuse them in working with those who may be judged less fortunate by an arbitrary set of standards.

From these benefits which mark us as privileged members of society evolve our responsibilities. Because of our capacity and training, we must be prepared to

lead in our community, which will look for guidance as well as professional skills. Because of our intimate dealing with human bodies and minds, we must assume a responsible attitude toward the needs and confidences involved. We are indebted to our country which has placed its faith in our endeavours and which can rightfully expect a worthwhile return, in the form of accomplished practitioners. Therefore, we must not be "day-labourers", for our responsibility is a constant thing and our privileges require us to show something extra in the way of productive work.

In satisfying these responsibilities, there comes satisfaction. With the knowledge that we are privileged and have responsibilities, satisfaction comes easily.

A MATTER OF POLICY

Each year the Editorial Board and Staff of the Medical Journal considers a suitable policy regarding the contents of the forthcoming volume. This is done so that the type of articles used coincides with the desires of a critical undergraduate body.

In order to establish an accurate picture of these desires, a questionnaire was circulated after the publication of Volume XXVII. Information obtained in this way indicated the popularity and utility of former articles and provided suggestions for future articles. In keeping with this poll, the Journal will choose and edit articles for Volume XXVIII so that it will, in the main, cover topics dealing with: interpretations of symptoms, summaries of clinical data on specific diseases, theses on subjects taken in the curriculum, uses of diagnostic aids. The Journal will discourage articles with research themes.

As in the past, undergraduate contributions will be encouraged. Preference will be given to worthy articles from undergraduate sources over articles from graduates and staff.

HUMANISM AND MEDICINE

H. B. VAN WYCK

PART XIII

THE POST-RENAISSANCE WORLD

To UNDERSTAND THE SUDDEN acceleration of scientific progress in the new Europe, the student of the history of medicine may profitably ponder the fundamental changes which took place in world outlook, philosophy, and politics as the result of the revolution we know as the Renaissance.

The central idea of the Middle Ages which hovered over the citizens of the Latin West was embodied in the statement: "Universalia sunt realia (Ideas only are real)". The great controversy on "Universals" which occupied the minds of the mediaeval thinkers never concerned itself with the truth that ideas or universal concepts were the only realities. This principle, known as Realism, was widely and tenaciously held. The disputes in the schools were concerned mainly over the formulation or the interpretation of the principle. Three schools of thought succeeded each other. Of these, extreme Realism maintained: Universalia sunt ante rem; that is, ideas (universal concepts) come before concrete things and are their causes. Moderate Realism posited: Universalia sunt in re; that is, ideas are the inherent true substance of things. The third school of thought was called the Nominalists who held "Universalia sunt post rem". The exponents of Nominalism held that universal concepts or ideas are abstracted by the reason from concrete things. This latter view tended to weaken the faith in universals as the only reality, and prepared the way for the new interest in things in themselves. The inquisitive mind became aware of individual things, of "hard, stubborn facts", in Whitehead's memorable phrase, and thus was the way prepared for the displacement of uncritical deduction, and the triumphant application of induction to scientific method.

The Middle Ages were, however, a pre-eminently philosophic age. The world picture was dominated by the assumption that universal concepts, ideas, and classes were alone actual and eternal. This was what Plato had taught and this constituted the warp and woof of life in those centuries of faith. The people of the time were a "universal" humanity to which geographical and national differences were only secondary features. The inhabitants of Latin Christendom were under the dominion, at least nominal, of a universal ruler, a Caesar. Even when this dominion was theoretical only, the claim was jealously maintained by the futile inheritors of the imperial Roman tradition. Sharing and rivalling this temporal overlordship was a "universal" church. Life was controlled by a "universal" economy, adorned by a "universal" style—the Gothic, and subject to a "universal" code—the etiquette of chivalry. The

"science" had this quality of universality—the mediaeval theology which guided and surmounted all thought. Throughout all, permeated the universal law: the Roman, and the universal language: the Latin.

"Thus was the mediaeval world built up, on a finely graded series of believed abstractions and lived ideas, rising in pure, clean lines like a cathedral or one of the elaborate 'Summae' of the schoolmen, with on the one hand the secular side, with its peasants and citizens, knights and vassals, counts and dukes, kings and emperors, and on the other the spiritual side, and its broad foundation of believers and its ascending scale of priests, abbots, bishops, popes, councils, leading finally to a ladder of angels, of whom the uppermost sit at the feet of God—a nobly imagined and well-ordered hierarchy of universals. Such a humanity could indeed take as its motto—and that in full philosophic consciousness of its import and not as a mere conceit of dialectical cleverness—the proposition 'Universalia sunt realia'."[1]

The mediaeval view of the world was held as a fact of belief, not as a scientific phenomenon. During the intellectual upheaval of the 14th and 15th centuries, a new quality passed gradually into the European consciousness—an exclusive and all-embracing Rationalism, which for the first time since the happy days of Greece turned men's eyes to the earth and the physical universe. For the next 400 years, reason had full sway and it is only in our time that man is beginning to be doubtful of the power of reason only to possess the world.

It was inevitable that the new outlook should come into conflict with orthodox religious beliefs. The revival of the direct study of nature which has been outlined in the previous chapter[2] and the discovery of the New World, gave impetus to this conflict.

The tragic fate of Giordano Bruno typifies the bitterness of reaction to the New Thought. This wayward genius carried further the implications in the work of Nicolas of Cusa and Copernicus. Bruno taught that not only does the Earth move round the Sun, but that the Sun itself moves, the stars are centres of comparable systems, and that our planetary system is in no sense the centre of the universe. Bruno envisaged an "infinite universe, endless in space and time, a universe whose common soul is within the whole to which it gives being."[3] No longer was man the centre of a "created universe". The important elements in his teachings were that there are others worlds than ours, and that space and time are infinite. The concept of a universe permeated by a common soul became the basis of a belief in the uniformity in all the workings of the parts of the universe and the reign of uniform natural laws. The orthodox, profoundly disturbed by the pagan character of Bruno's teachings which harked back to Neo-Platonism and the Stoics, were revolted by the unscriptural movement of the Earth about the Sun. The inexorable end of the tragedy was logically predestined. After seven years in the prisons of the Inquisition, in 1600, Giordano Bruno was burned at the stake.

Before the first half of the seventeenth century had run its course, these new views, with implications that had outrun the work of the more conservative Copernicus who had laid the foundation of the change, had displaced the mediaeval cosmogony. To the men of

science, the universe was no longer a fixed, diagrammatic scheme, but a universe boundless and of infinite possibilities for discovery. "The little tracts of Bruno printed in 1584 mark the real change from mediaeval to modern thought, and especially to modern scientific thought."[4]

The fires of Bruno's martyrdom mark the beginning of the 17th century—the century of genius. With improved mathematics as an essential tool, the scientific discoveries of the new age made unrivalled progress. The qualitative abstraction of the preceding eras became replaced by quantitative and concrete measurements. Modern science had laid impregnable foundations.

Before commenting on the changed political and social background of the post-Renaissance Europe, one may regret the violence with which the old was destroyed and the new established. The figure of Erasmus typifies the wisdom of those whose hearts were tuned to the progress of human happiness and knowledge. One might have hoped that the old forms yielding gradually would adapt themselves to the new growth, that the terror and bloodshed of the religious wars of the 16th and 17th centuries might have been avoided. It was the hope of Erasmus that the new knowledge could generate within the old order and the world be civilized according to the Catholic idea. The horrors of civil strife, the rage for gold, and the atrocities and devastation in the New World might have been checked had moral and spiritual authority found sufficient support. The tolerant humanism of an Erasmus was impotent to stem the flood. Revolution took its inevitable course.

The political and social changes depended on the disruption of the Church. This was, however, accompanied by a strong revival of spiritual life, both in the dismembered Church and among the sectaries who founded new ecclesiastical orders. With the disappearance of the unity of Christendom emerged new national outlines with increase in the power and authority of state government. The emergence of the vigorous monarchy of the Tudor house in England is the most striking example of this. Instead of the co-operative and all-embracing dualism of Empire and Church, federations of peoples, separate in type and dialect and divergent in interests, yet bound together by common tendencies and cultural heritage, appeared on the stage of history. Balance of power supplanted obedience to central authority. Henceforth, the leadership of Europe was not the inherited prerogative of a crown, imperial or papal, but was to be won by the nation gaining the ascendency, in the spiritual realm by mental superiority, and in the temporal by military or naval strength.

Fostering the new monarchies of Spain, France, and England were the voyages of discovery in the New World. Not since the Crusades had Europe found such stimulus. Paralleling the development of scientific studies were the expanding horizons of travel, each then as now, the unrivalled ferment of intellectual progress.

After the voyages of Columbus, the discoveries of the Cabots, Vasco da Gama, and Magellan followed in quick succession. The crusading spirit of the first explorers was replaced by the gainful lust of the conquerors and gold and silver began to flow from the New to the coffers of the Old World. France and England were drawn to challenge the

overwhelming power of Spain. While England and France fought both for self-preservation and gold, Holland arrayed herself heroically only to obtain freedom from her hereditary Spanish master. The 16th and 17th centuries were an age of conflict. France was lacerated by religious strife and Germany was decimated by the Thirty Years' War. One may dwell too much on the turbulence of European politics and let the constructive work of the great innovators in science, art, and philosophy pass by unnoticed. It is also easy to exaggerate the destructive havoc, material and spiritual, which the changes in outlook and method produced in this period. Papal authority was eliminated in England and the new Lutheran Church was established in Germany; but the moral and intellectual tradition of a thousand years of Christendom remained firmly implanted on the European mind and this matrix in which new forms were rapidly growing, altered but slowly. By 1600, the builders of the new Europe had accomplished much, and on these early foundations the great galaxy of geniuses adorning the 17th century reared the temple of modern science and philosophy. A community of effort, similar to that which had yoked the sages of Greece, appeared again in the world. The philosopher of the new age recalled in liberal-mindedness and breadth of horizon those of the best days of the Graeco-Roman world. Copious correspondence, widespread interest in new ideas, extensive travel to foreign seats of learning marked the increase in intellectual fervour. Learned societies, active in unremitting search for truth until the present day, were founded.

The pioneers in the new progress had arisen, as has been noted, in Italy. To the royal succession of Copernicus, Leonardo da Vinci, and Bruno came early in the 17th century the founder of modern physics and mechanics, Galileo, and the light first generated in Italy spread rapidly beyond the Alps with the achievements of Descartes, Newton, Harvey, and Leibnitz.

"It was an international work, within the area of that smaller progressive world which Greek intellect supported by Roman power had divided from the rest of mankind."[5] Progress in physics, mechanics, dynamics, and mathematics anticipated by more than a century the establishment of the modern biological sciences. Even Harvey's discovery in physiology was a mechanical one. The more rapid advance in the study of the function of living tissue did not take place in the "Century of Genius". It had to await the later development of Chemistry; but this lag in the progress of the biological sciences accounts for the curious anachronistic failure of the science of Medicine to take its part with the mechanical sciences in the betterment of the human situation. That a Pasteur did not appear in the first century of the post-Renaissance world may find its explanation in the relation of the Biological sciences to the Physical. Charles Singer in his "Short History of Science" gives this summary of the problem: "Biological science, it is often said, always lags behind physical science and is always in a more elementary stage. The statement is hardly borne out by history. It depends for any truth that it may possess upon a particular conception of the nature of science. In antiquity, in the hands of Aristotle, biological science was far ahead of physical. Again the earliest modern scientific work

of a monographic character, the great book of Vesalius, is exclusively biological. The treatise of Copernicus, published in the same year, is mediaeval by comparison, and contains very few original observations. To justify the doctrine of the relative backwardness of biological science it is necessary to postulate that the aim of biology is to represent biological phenomena in physical terms. Thus expressed, the statement becomes a self-evident proposition for, if the postulate be granted, biology can never advance beyond its physical data. A large school of biological thinkers does not accept this postulate. Nevertheless, its is true that the most significant biological advances of the insurgent century were, in fact, attempts to express biological findings in physical terms."

Whatever the cause, the failure of an advancing biology to renovate the equipment of the physician of the 16th century left the status of the practitioners of medicine unchanged by the general scientific progress. The appearance of a sporadic genius, such as Paré, produced all too slowly an improved professional efficiency. The practitioners of the 16th century were often quite as itinerant as the students and professors described in the previous chapter. Without social recognition and the victims of precarious remuneration, the healers of the day, still a prey to the superstition and outworn traditions of the past, did little to deserve fuller recognition. The armamentarium that advancing science was to provide was still awaiting a greater knowledge of biology. Not until the approach of the seventeenth century was there much improvement in the social and mental status of medical men.

To this poor level of attainment the changed organization of the hospitals in non-Catholic countries contributed. Under ecclesiastical control the hospitals of Europe had provided to a high degree a humanitarian service, if one takes into account the scientific limitations of the day. With the tendency to secularize hospitals after the Reformation, there came a great lowering of hospital standards, as when these institutions were placed under lay boards, they sadly showed the lack of the experience the Church had accumulated through the centuries. With the increase in the size of the great cities of Europe, the efficiency of the large institutions could not bear the strain of the increasing demands. This was to some extent unremedied until the nineteenth century—the century of Pasteur and Florence Nightingale.

If the historian must deplore the tardiness with which the general increase in scientific knowledge was made available to the sick, the task of recounting the progress in general knowledge which occurred in the 17th century is a congenial one as it bears on every hand the promise of ultimate improvement in medical care which has culminated in the last fifty years in the most glorious achievement of our Western World—modern Scientific Medicine.

So far in the last two chapters of this study, an attempt has been made to outline the antecedent conditions which prepared the stage for the unprecedented efflorescence of science in the 17th century—the return to the study of nature in the preceding century, and the changed philosophic, social and political outlook that followed the Renaissance. These changes resulted in "an abandonment of the metaphysical analysis of the nature of things in favour of the study of the empirical fact of antecedents and consequences. In religion,

it meant the appeal to the origins of Christianity; and, in science, it meant the appeal to experiment and the inductive method of reasoning. A brief, and sufficiently accurate description of the intellectual life of the European races during the succeeding two centuries and a quarter up to our own time, is that they have been living upon the accumulated capital of ideas provided for them by the genius of the seventeenth century. The men of this epoch inherited a ferment of ideas attendant on the historical revolt of the 16th century and they bequeathed formed systems of thought touching every aspect of human life."[6] To record these, one surveys the work of Francis Bacon, Harvey, Kepler, Galileo, Descartes, Pascal, Huygens, Boyle, Newton, Locke, Spinoza, and Leibnitz, to select the more outstanding from a greater group of important contemporary figures. The student of medicine will perhaps naturally first turn to the outstanding physiologist of the century—William Harvey, whose work will next be described.

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1. The Cultural History of the Modern Age—Egon Friedell, Page 77.
2. University of Toronto Medical Journal, Vol. XXVII, No. 6.
3. On the Infinite Universe—Bruno.
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5. The Living Past—Marvin.
6. Science and the Modern World—Whitehead.

ABSTRACTS

MEDICINE

The Familial Occurrence of Multiple Sclerosis and Its Complications, Roland P. Mackay, Annals of Internal Medicine, August, 1950, 298-320.

In a comprehensive review of the literature, the author discusses a total of 84 instances of familial sclerosis involving 188 persons including five instances (three brothers and four pairs of siblings) that he has encountered in his own private practice.

He recalls that Curtius and his school have shown that the incidence of multiple sclerosis is five times as great among the total relatives and twenty times as great among the siblings of their German sclerotic parents as the doubled incidence among the general Swiss population. However, he considers Curtius' work none too secure.

He concludes that multiple sclerosis exhibits a familial incidence more frequently than mere chance would determine. He advances the theory:

a) There is a familial constitutional "vulnerability" to multiple sclerosis. This vulnerability, possibly non-essential and non-specific, is subclinical and, *per se,* inadequate to produce the disease.

b) There is a second non-familial, possibly exogenous, cause or group of causes which are competent to evoke the disease, especially when the first, or constitutional factor is already present.

D. A. Smith

An Antibiotic Approach to Tuberculosis—Streptomycin and Neomycin, S. A. Waksman, Ph.D., B.M.J., 595-600, Sept. 9, 1950.

The author presents a short summary of the progress made with the antibiotics in the treatment of tuberculosis. He gives an evaluation of the new drug Neomycin as compared with Streptomycin.

Clinical Tests have shown that:

a) Neomycin is more active than Streptomycin against human and animal pathogenic strains of M. Tuberculosis.

b) Neomycin is active against both Streptomycin-active and Streptomycin-resistant strains.

c) Neomycin favours to a far less degree than Streptomycin the development of resistant strains of mycobacteria.

d) Neomycin has a relatively low toxicity in patients and has a high therapeutic index.

An evaluation of the effect of Streptomycin in experimental and clinical tuberculosis indicates its value, in meningeal and acute miliary tuberculosis (formerly with a 100% mortality rate), its value in pulmonary tuberculosis, skin lesions, tuberculous fistulae and sinuses. It is emphasized that Streptomycin is not a cure in itself but an active aid to recovery.

The problem of strains becoming resistant to Streptomycin is discussed. The suggestion is made that the possibility of utilizing a combination of anti-mycobacterial agents may provide an answer to the problem of the development of resistance of the organism. In spite of this drawback the author concludes, "Chemotherapy of Tuberculosis is possible".

J. A. McKee

The Treatment of Acutely Intoxicated Alcoholics, H. W. Smith, G. L. McBroom and R. G. Bell, C.M.A.J., 63: 250-254 (Sept., 1950).

The purpose of the study was to test the value and mechanism of intravenous therapy on a hospitalized acute alcoholic. Attempts were made to measure objectively any increase in the rate of removal of

alcohol, and to measure improvement of withdrawal symptoms.

The method was to select 35 otherwise healthy patients admitted with acute alcoholism. To 11 of these was given insulin (30 to 50 units of regular insulin, according to age, weight and body build), 150 mgm. thiamine, 150 mgm. nicotinamide, made up to 50 ml. of 50% glucose. As controls some were given glucose and insulin only, vitamin D in saline alone, glucose alone or normal saline alone.

Elimination of alcohol was measured by two hour blood levels. Improvement was measured by clinical examination on an objective four point scale before and six hours after treatment, including: (1) intoxication (C.N.S. function), (2) craving, (3) gastro-intestinal symptoms, (4) tremor, (5) co-operation, (6) relaxation, (7) sedative needed.

The results showed no significant change in the rate of alcohol removal, improvement of liver function, or change in "intoxication". However, they found significant results and concluded that intravenous treatment with insulin, glucose, and B vitamins is of definite value in alleviating the withdrawal symptoms (craving, gastro-intestinal complaints, tremor, and ability to relax without sedatives) in the acute alcoholic.

J. McIntyre.

Early Clinical Manifestations of Disseminated Sclerosis, Douglas K. Adams, John M. Sutherland, W. Bell Fletcher, B.M.J., 431-436, August 19, 1950.

The symptoms and signs of 389 cases of disseminated sclerosis are discussed.

Weakness in one or more limbs was the first symptom in more than one half of the cases examined, while visual upset temporary dimness or loss of vision in one eye, or diplopia) was the earliest manifestation in a further 26% of cases.

Next in order were paraesthesiae, vertigo and upset of micturition.

They draw attention to the fact that, although it is relatively rare as an initial symptom, on presenting for treatment, 45% of patients complained of some defect of micturition.

They suggest that almost every case of otherwise idiopathic retrobulbar neuritis is due to the causal agent of disseminated sclerosis.

D. A. Smith.

PAEDIATRICS

Intussusception in Infancy and Childhood, G. H. Ware and R. J. Coffey, Surg. Gyn. and Obstetrics, 91:173-179, 1950.

The authors give an analysis of 65 cases of intussusception encountered in 51,469 admissions. The average age in the series was 13 months.

The coexistance of enlarged ileocecal lymph nodes in 20% of cases suggests an important etiological factor. The pathologic changes are largely due to the duration of the intussusception plus the firmness with which the bowel is held. The sequence of signs and symptoms and physical findings is presented with emphasis on an early diagnosis because irreducibility and gangrene of the involved bowel increase in direct ratio to the hours of intussusception. Abdominal pain, mild shock, and blood stained rectal discharge is characteristic. A palpable abdominal mass is the one most important early physical finding. Once the diagnosis is established, early operation is stressed. The proper site for incision is in the region of the cecum because this is almost invariably the most difficult part of the reduction. In most cases, reduction was achieved without difficulty by gently squeezing the head of the intussusception in an oral direction at the same time applying, if necessary, very gentle traction on the intussuscepted bowel.

In cases where the viability of the bowel was questionable, exteriorization was done. Where reduction is impossible or gangrene is evident, it is felt that with modern facilities a primary anastomosis may be carried out with no greater risk than that involved with exteriorization. Mortality figures for this series show: (1) the importance of early operation,

(2) increased risk under 10 months, (3) a serious prognosis with elevated temperature and leucocytosis, (4) peritonitis as main cause of death, (5) more favourable prognosis with enteric type of intussusception.

W. W. Belch

OBSTETRICS

Time of Ovulation, C. L. Burton, E. T. Engle, American J. of Obs. and Gyn., **60**:539-542.

Determination of ovulation time has been of great interest to investigators for many years. The main difficulty has been the impossibility of directly observing the ovary from time to time during the cycle. The problem has been therefore to identify other simultaneous measureable physiological phenomena which have some relationship to ovulation and the presence of which would permit the supposition that ovulation had occurred. Changes in (a) urinary excretion of hormonal products, (b) epithelium of the genital tract, and (c) basal body temperature, have been investigated. The authors mention briefly the clinical investigation of various workers in this regard. In most cases their methods of assay are either inaccurate or for purposes of clinical investigation are technically cumbersome. The basal body temperature technique would appear as the most practical means whereby a patient or doctor can determine, at a clinically useful time, the date of ovulation. Buxton and Engle investigated 18 patients and attempted to correlate basal body temperature with the findings in the endometrium and in the ovary at laparotomy. All patients were operated upon the day on which their temperature showed the characteristic midcycle rise indicative of ovulation. If the basal temperature is a good criterion of ovulation the different corpora lutea should all be the same age (allowing for a normal technical variant of 24-36 hours). Results showed a variation in luteal age of at least three and possibly four days. The authors therefore conclude that rigid use of temperature charts as ovulation indicators is not warranted; if temperature charts are used, patients should understand that they are only approximate indicators of ovulation time.

A. Eisen

The Management of Placenta Previa, Herman W. Johnson, Houston, Texas, Amer. Jour. of Obs. and Gyn., **59**: No. 6, 1950.

Two hundred and one cases of placenta previa are reviewed to support the theory that: (1) placenta previa is not an obstetrical emergency in which pregnancy must be terminated as soon as diagnosed, (2) that the bleeding in placenta previa is intermittent and occurs only with dilitation of the cervix and/or lower uterine segment and separation of the placenta and not with each uterine contraction—the patient thus has ample time to recover from the shock, (3) the inference that even the first hemorrhage may be fatal is too frightening and unwarranted, (4) fetal salvage can be increased through careful evaluation of the case by blood studies after each bout of bleeding and the carrying of the pregnancy to more certain fetal viability, (5) a safe time must be selected for those cases terminated by Caesarean section—this must not be done in the presence of shock—blood for replacement should be on hand in the treatment of all varieties, (6) any remaining placental tissue after the second stage of labour should be allowed to separate naturally, (7) there are only two methods of treating placenta previa; rupture of the membranes or Caesarean section.

Technique of vaginal examination is discussed; the danger of rectal examination in the bleeding obstetrical patient is pointed out.

Infant mortality in the first 79 cases was 30.1%. In the second series of 122 cases it was 14.7%. Total in both series was 21.0%. Maternal mortality was nil.

S. P. Starkman

SURGERY

Tumors of Salivary Gland Origin, Grantley W. Taylor and Gerald G. Garcelon, New Eng. J. of Med., **238**: 766-769, 1948.

The authors of this article discuss the type, incidence, diagnosis, and treatment of salivary gland tumors. They confine most of their remarks to mixed tumors and carcinoma of the parotid and submaxillary salivary glands.

From a series of approximately 204 cases the authors show that mixed tumors occur, on the average, in patients of 30-40 years of age; and that the median duration of the tumors is more than 3 years. The tumor is of hard consistency in only 30% of cases, freely movable in 80%, and there is enlargement of cervical lymph nodes in only 3% of cases.

The authors found that carcinoma of the parotid or submaxillary glands, on the other hand, occurred with greatest incidence in the decade of 50-60 years of age, and the median duration of the tumor was under one year. This malignant process in the salivary glands was found to be of hard consistency in 80%, and movable in 15% of cases. The authors also noted that the carcinoma was accompanied by enlargement of cervical lymph nodes in 40%, primary facial-nerve palsy in 25%, and remote metastases in 25% of the series they studied.

In the treatment of a mixed tumor the authors state that simple enucleation invites the possibility of recurrence and therefore they feel the best treatment is to expose the facial nerve, if the tumor lies in the parotid salivary gland, and to remove that part of the gland lying superficial to it along with the tumor. If the tumor lies deep to the facial nerve the nerve along with its branches should be lifted and the tumor removed. In treating mixed tumors of the submaxillary gland the authors again highly recommend radical removal of the gland.

The treatment of the carcinoma of salivary glands is far from satisfactory but the authors believe that early wide resection offers the best chance for cure. In the series of cases the authors also show that radiation treatment is not effective and should be discouraged.

R. L. Richardson

A New Concept of Venous Thrombosis, Armond J. Quick, Surg. Gyn. Obs., **91**:296-300, 1950.

The author offers a simple explanation for the formation and propagation of a thrombus within a vein. Due to an injury of the vessel, even although it be minor, a rough surface is produced to which platelets adhere. As these cells disintegrate, thrombin is produced and the formation of thrombus is initiated. This primary thrombus undergoes contraction and exudes a serum rich in nascent thrombin. If the circulation is sluggish, this serum will not be washed away promptly; but instead it will cause the formation of a secondary thrombus upon the original fibrin clot. As this new addition to the primary coagulum contracts, it gives rise to further growth of the thrombus. Clot retraction not only explains the propagation of the clot, but it also accounts for its non-attachment to the vessel wall except at the site of origin.

The author further postulates that any means which diminishes or slows clot retraction should be valuable prophylactically against thrombin. The reduction of the number of circulating platelets is a theoretical means but is not feasible clinically. The reduction of the potential formation of thrombin is readily accomplished by heparin and by dicoumarol. It is particularly important as a prophylactic measure in the correction of anemia, since the lower the cell volume, the greater the retractability of the clot.

H. Axelrod

NEWS AND NOTES

Medical Society

The Student's Administrative Council of the University has appointed Medical Society President Gord Cameron as Chairman of the Blue and White Society. This is a great tribute indeed to the capabilities and enthusiasm which Gord possesses. Miss Betty Line, President of the Medical Women's Undergraduate Association, has been appointed Women's Athletic Commissioner for the University. Betty is also a member of the University Women's Athletic Directorate.

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Claude MacDonald, Meds 5T1, who was President of the Canadian Federation of Newman Clubs last year, was elected President of Pax Romana, the international Roman Catholic student organization, at the Pax Romana Convention held this summer in Europe.

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Student Administrative Council Honour Awards were presented to four members of last year's graduating class at Convocation this spring. Those receiving awards were Dr. R. F. Hetherington, Dr. H. R. Rowsell, Dr. D. M. Stillwell, and Dr. J. A. Weir.

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Fourteen University of Toronto Medical undergraduates have been recently honoured by election to the University Chapter, Alpha Omega Alpha, Honour Medical Fraternity. These include Mr. M. L. A. Auerback, Mr. J. R. Evans, Miss F. M. Hill, Mr. J. C. P. Ranalli, and Mr. R. R. Tasker, of Meds 5T2; Mr. W. J. Bailey, Mr. R. S. Fowler, Mr. R. E. Johnston, Mr. N. C. Kerbel, Mr. S. J. Klebanoff, Mr. I. Lidsky, Mr. T. G. Ryley, Mr. D. A. Smith, and Mr. L. Warren, of Meds 5T1.

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The appointment has been announced of Dr. William Boyd as Honorary Secretary-Treasurer of the Medical Society.

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With "Panacea", on November 3, at Hart House, the Medical Society again plays host to all the Campus. The general theme for the evening is to be taken from King Arthur's Court; decorations and entertainment will be adapted accordingly. Every facility of Hart House will be utilized to make the evening a memorable one. The many and varied attractions include a Variety Show, a gala Water Show, and a programme of classical music. Three orchestras will be in attendance, Benny Louis, Len Duke, and Jim MacDonald. Dave Storey is Chairman of the Panacea Committee, and Rod Box is Vice-Chairman. Proceeds from the Tuck Shop will again be donated to ISS.

* * *

On September 26, at a Reception at the Women's Union, the Freshman Class of 5T6 was formally welcomed to the Faculty by Dean MacFarlane. The address of the evening, from Dr. W. E. Gallie, was enthusiastically received by those present. Medical Society President Gord Cameron, Vice-President Sid Wax, and Public Relations Director John Evans extended hearty greetings to the new medicos on behalf of the Medical Society.

* * *

A Highlight of the social calendar for Meds 5T5 and 5T6 will be the annual Soph-Frosh which is this year being held at the Club Embassy, on Monday, October 30. Dancing, entertainment, and refreshments will combine to make this a most enjoyable evening.

* * *

Chairman Dick Farmer and the newly re-organized Medical Arts and Letters Group have planned an ambitious programme for the coming year. One of the most laudable developments will be the founding of a University of Toronto Osler Society for undergraduates and graduates interested in the history of medicine. The popular practice of presenting lectures

and recitals by distinguished guests will be continued throughout the coming year.

* * *

Other Medical Society activity will be continuing much as usual. Daffydill Nite will be held this year December 11 to 14 in Hart House Theatre. The Meds At-Home is to be held February 14 at the Royal York Hotel.

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Camsi

The National Camsi convention was held in Montreal, October 18 to 21. Bruce Buchanan and Abe Halpern represented the University of Toronto at the meetings. Two University of Toronto undergraduates were appointed to the staff of the Camsi Journal. Mrs. Juanita Casselman is Assistant Editor; Mr. Jack Adelberg is Assistant Associate Editor. The annual Medical Art Salon was held in conjunction with the meetings.

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The 1950-51 Camsi Film Programme gets underway October 25, when a film on cancer is to be shown. Throughout the year Camsi Medical Films will be shown every Wednesday, from one to two o'clock, in the Toronto General Hospital Lecture Theatre.

* * *

Faculty

The Professor of Medicine, Dr. R. F. Farquharson, has recently returned from British Columbia where he addressed a special congregation at the opening of the new Faculty of Medicine, University of British Columbia. The occasion coincided with the golden jubilee of the British Columbia Medical Association. Dr. Farquharson received the degree of Doctor of Science, Honoris Causa, at this congregation.

This summer, Prof. Farquharson, who is President of the Royal College of Physicians and Surgeons of Canada, was elected a Fellow of the Royal College of Physicians, London.

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Three more honours have recently befallen Dr. C. H. Best, Professor of Physiology. Dr. Best has been awarded the Sir Joseph Flavelle Medal by the Royal Society of Canada for his many important contributions to medical science. At the annual meeting of the American Philosophical Society, Dr. Best was admitted to membership in that body. And in June, Dr. Best addressed the Faculty of Medicine convocation, Queen's University, Kingston. At this convocation, Dr. Best received an honorary Doctor of Laws degree.

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Early this summer, Dr. R. M. Janes, Professor of Surgery, spent three weeks in the British Isles. During his visit, Dr. Janes delivered the McArthur Lecture at the University of Edinburgh, and addressed a meeting of the Association of Surgeons of Great Britain and Ireland, in London. He also spoke in Belfast.

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Late in June, the President of the University of British Columbia announced the appointment of Robert Bews Kerr, O.B.E., M.R.C.P. (London), F.R.C.P. (Canada), as the first Professor of Medicine, and Head of the Department, in the newly organized Faculty of Medicine at the University of British Columbia.

Dr. Kerr, a graduate of the University of Toronto, served overseas with the rank of Lieutenant Colonel during World War Two. On his return, he became a popular member of the teaching staff of the Faculty of Medicine, University of Toronto, and a Physician to the Toronto General Hospital. In 1947, Dr. Kerr was promoted to the rank of Assistant Professor of Medicine in charge of Therapeutics, and in 1948, he became an Associate Professor.

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Dr. K. J. R. Wightman, F.R.C.P. (Canada), has been appointed Assistant Professor of Medicine, in charge of Therapeutics, to succeed Dr. Kerr. Dr. Wightman graduated from the University of Toronto in 1937, and was awarded the Faculty of Medicine Gold Medal, given by the Senate of the University, for the highest average marks. While at the University, Dr. Wightman also won a Battle proficiency scholarship, and an Ellen

Mickle fellowship which enabled him to study for a year at Cambridge University. During the Second World War, Dr. Wightman served with the Royal Canadian Army Medical Corps.

* * *

The appointment has been announced of Dr. Douglas E. Cannell, F.R.C.S., as Professor of Obstetrics and Gynaecology, and Head of the Department, University of Toronto. Dr. Cannell also becomes Obstetrician and Gynaecologist-in-Chief to the Toronto General Hospital.

Dr. Cannell is a native of Port Carling, Ontario, and received his primary education there and at Oakwood Collegiate in Toronto. He graduated from the University of Toronto in 1927. He trained for three years in Toronto, and spent four years in graduate work in Obstetrics and Gynaecology at the Western Reserve University in Cleveland. He was then appointed to the staff of the Toronto Western Hospital, where he was engaged in practice and teaching until the outbreak of the second Great War. As an officer in the Surgical Division of the Canadian Army Medical Service, Dr. Cannell went overseas with No. 15 General Hospital. He served with this unit until, being promoted to Lieutenant Colonel, he took charge of a field unit, No. 2 Casualty Clearing Station. At the end of the War, Dr. Cannell returned to University teaching and to his work at the Toronto Western Hospital.

Dr. H. B. Van Wyck, who has occupied the Chair of Obstetrics and Gynaecology with distinction for the past four years, will continue to lecture to University of Toronto undergraduates on the Humanistic and Scientific Values in Medicine.

* * *

A recent visitor to the University Medical School was Sir Geoffrey Jefferson, C.B.E., F.R.C.S., Professor of Neurosurgery, University of Manchester, who delivered the twenty-third annual Donald Balfour Lecture, October 18. Sir Geoffrey's topic was "The Surgical Management of Intracranial Aneurysms".

Dr. J. G. Greenfield, Head Pathologist to the National Hospital, Queen's Square, London, spent some time at this School recently. Dr. Greenfield gave lectures to the final year, and was heard at the Banting Institute, September 28, when his topic was "The Pathology of Closed Injuries to the Brain and Spinal Cord".

Prof. John Stallworthy of the Area Department of the United Oxford Hospitals has been a visitor to the Department of Obstetrics and Gynaecology. On September 26, in the Toronto General Hospital Lecture Theatre, Dr. Stallworthy discussed "Posterior Wall Placenta Praevia".

* * *

Dr. Eric A. Linell, Professor of Neuropathology, has been elected President of the Academy of Medicine, Toronto. Dr. Linell succeeds Dr. A. R. Hagerman.

* * *

On June 16, 155 members of the Class of Medicine 1950, graduated from Convocation Hall, University of Toronto. Dr. E. P. Scarlett of Calgary addressed Convocation. This address is published elsewhere in this issue of the Journal.

* * *

The Federal Health Department has approved a grant of $170,666 to St. Michael's Hospital. This Hospital is adding a seven-story wing to contain 139 adult beds, a 50 cubicle nursery, and service departments. This will increase the total capacity to over 800 beds.

By alterations to the Toronto General Hospital, twenty additional beds, for surgical patients, have recently been added.

The Hospital for Sick Children has received a bequest of nearly half a million dollars. This bequest was contained in the will of the late Mrs. J. E. Hammell.

* * *

Dr. R. C. Harrison, a fellow in the Department of Surgery, has been awarded the Reeve Prize, given annually for scientific research by one who has held a staff appointment for less than five years. The award was given Dr. Harrison for a motion picture, made with the help of a microscope, and demonstrating the response of a living blood stream to certain chemical and physical reactions. Dr. W. G.

Bigelow and Dr. R. O. Heimbecker were colleagues of Dr. Harrison in this project.

* * *

The Federal Government has awarded a travelling fellowship in health education to Dr. C. E. A. Robinson of the School of Hygiene, to enable Dr. Robinson to visit various American Schools of Public Health including Columbia, Yale, Harvard, Johns Hopkins and North Carolina.

The W. K. Kellogg Foundation has awarded travelling fellowships, for study in the United States, to Dr. W. P. Callahan of the Department of Ophthalmology, and to Dr. C. P. Rance of the Department of Paediatrics.

* * *

The Charles Mickle Fellowship for 1950 has been awarded by the University of Toronto to Dr. Selman A. Waksman, Department of Microbiology, Rutgers University, for his discovery and isolation of streptomycin. The Fellowship is awarded annually to that member of the medical profession who is considered, by the Council of the Faculty of Medicine of the University, to have done most during the past ten years to advance sound knowledge of a practical kind in medical art or science.

* * *

Toronto police, in co-operation with the Department of Pharmacology, University of Toronto, have been conducting scientific tests for several months in an effort to determine conclusively the concentrations of alcohol in car drivers which lead to traffic accidents. The survey has been planned by research workers in the Department of Pharmacology, with the aid of the Deputy Attorney-General, the Liquor Control Board, and Dr. Joslyn Rogers. Part of the study is being financed by a federal public health grant to the Department of Pharmacology.

* * *

Dean MacFarlane reported recently that, of 5,000 living graduates of the Faculty of Medicine, University of Toronto, 20 per cent are in the United States of America. It is interesting to note, however, that although 40 per cent of the Dean's class went to the United States, the number is getting less each year and is now barely 10 per cent.

* * *

On July 1, the courses in Occupational and Physical Therapy at this University, came under the administration of the Faculty of Medicine. A new, combined, three-year course leading to a Diploma in Physical and Occupational Therapy is being offered, for the first time, this fall.

Dr. Andrew Zinovieff has recently arrived from England to take part in the direction of this new course. Dr. Zinovieff is also associated with the Workman's Compensation Board, and will act as a consultant in Physical Medicine at Sunnybrook Hospital. Dr. Zinovieff has recently been in charge of the Department of Rehabilitation and Physical Therapy at the Radcliffe Infirmary, Oxford.

* * *

Seventy graduate students were enrolled in an advanced course in Medicine, Surgery, and Obstetrics and Gynaecology, held recently at the University. The course began August 28 and continued until October 14.

* * *

Alumni

One of the most important projects of the University of Toronto Medical Alumni Association is the Medical Alumni Association Scholarship, Bursary and Research Fund. This Fund, initiated first in 1945, now makes available a scholarship of $200 to a student in each of the six years of the Medical Course, and four bursaries of $100 each, available to students in any year who feel the need of financial assistance. The Association also has available the Medical Alumni Loan Fund, through which students may borrow money to further their education. Information about these Funds is available in the Faculty of Medicine Calendar. Application for the Scholarships must be filed in the Dean's Office by November 1; for the Bursaries, by January 15. Further information may be secured from Dr. J. L. A. Fowler, Secretary of the Medical Alumni Association, or from Dr. E. J. Clifford, Chairman of the Scholarship Committee.

During the past academic year, Medical Alumni Association Scholarships were awarded to D. A. Smith, Meds 5T1; W. D. Friend, Meds 5T2; G. Y. Hiraki, Meds 5T3; and C. D. Anderson, Meds 5T5.

Graduates are kindly requested to keep the Scholarship, Bursary and Research Fund in mind and send contributions to the Association, either with their membership dues, or at any time. Past support has been greatly appreciated and is a guarantee of the continuation of this important effort.

* * *

The Medical Alumni Association also has available a Graduate Bursary Fund in Psychiatry. This Fund was initiated by a graduate in the United States to assist young doctors to complete their courses in this specialty. The Association will be glad to receive additional gifts for this or similar purposes. These will be acknowledged by the Medical Alumni Association, 42 St. George St., Toronto.

* * *

Four scholarships, valued at $200 each, have been awarded to students of the Faculty of Medicine by the University of Toronto Alumni Association. These have been awarded to A. L. Halpern, J. E. Knapp, and G. H. Morrison, Meds 5T2; and to F. B. Fallis, Meds 5T3.

* * *

In conjunction with the Varsity Home-Coming Weekend, and in collaboration with the Ontario Medical Association, the Medical Alumni Association held a very successful postgraduate course at Sunnybrook Hospital from October 17 to 20. The course was planned to cover topics of particular interest to the General Practitioner. Panel discussions were held, as were clinical demonstrations and formal lectures.

The annual meeting of the Medical Alumni Association was held on Thursday, October 19, during the course.

* * *

As for the Home-Coming Weekend itself, extensive plans were made by the Medical Alumni Association, the undergraduate Medical Society, and the various University Committees. Stan Bain and his cohorts deserve much credit for the very effective, and very colourful float, which represented Medicine in the Saturday morning Home-Coming Parade. Medical undergraduates took part in both the Stadium Welcome Rally, Friday evening, and the Blue and White Show in Convocation Hall, Saturday evening. Sunday afternoon, between 4 and 6, the Medical Alumni held Open House in the Medical Building, to which alumni, faculty members and undergraduates were invited.

* * *

Retiring after nine years' service as the Director of the University of Toronto Health Service, Dr. Charles Gossage, F.R.C.S., has announced his appointment as the Associate Medical Director of the Confederation Life Assurance Company. Dr. George Wodehouse has been appointed to succeed Dr. Gossage. Dr. Wodehouse was appointed Assistant Director of the Health Service last April upon the retirement of Dr. William Stiver who relinquished his appointment to become Medical Director of Physicians' Services Inc.

* * *

Dr. Mackinnon Phillips, newly appointed Minister of Health in the Ontario Government, is a graduate from the University of Toronto, Class of 2T4. The Honourable Dr. Phillips has practised medicine in Owen Sound for a number of years, and was first elected to the Ontario Legislature in 1945, representing the constituency of Grey North.

* * *

The Medical Alumni Association dinner, held in The Great Hall, Hart House, last June, and given in honour of the graduating Class of 1950, and the Class of 1900, was an outstanding success. Nine members of the Class of 1900 attended, including Dr. E. Stanley Ryerson, former Secretary and Assistant Dean of the Faculty of Medicine, University of Toronto.

Dr. T. G. Heaton, President of the Medical Alumni Association, presented shields bearing the coat of arms and the crest of the University to Dr. D. M.

Young, President of the permanent Executive of the Class of 1950, to Dr. H. R. Rowsell, Vice-President, and to Dr. J. S. Leventhal, Secretary. Dr. Heaton expressed the hope that the shields would be displayed at all class functions and reunions.

The toast to the University was proposed by Dr. G. Maloney and replied to by President Sidney Smith. Dean MacFarlane spoke with pride of the graduating Class to which he proposed a toast. In reply, Dr. D. M. Young thanked the Medical Alumni Association for past favours, the banquet and the presentations, and for favours still to come, such as the Postgraduate Courses. Dr. Young also paid tribute to the Dean and to the staff of the Faculty. Tribute to the retiring professors was paid by Dr. R. F. Hetherington, in answer to which Dr. W. L. Robinson made a very eloquent and humorous address.

In proposing the toast to the Class of 1900, Dr. David Selby, President of the University of Toronto Alumni Association, reviewed the medical discoveries of the past fifty years. It was "an exciting period" which had been witnessed by the Class of 1900. Dr. Dittrick replied eloquently to this toast, advising the Class of 1950 to keep its sights high.

Dr. Chassar Moir, Professor of Obstetrics and Gynaecology at the University of Oxford and the evening's guest speaker, brought greetings from the universities of Great Britain as well as Queen's University, Kingston. To the recent graduates, Dr. Moir extended a wish for their happiness and success in the future.

A. M. Robertshaw
R. L. Smith

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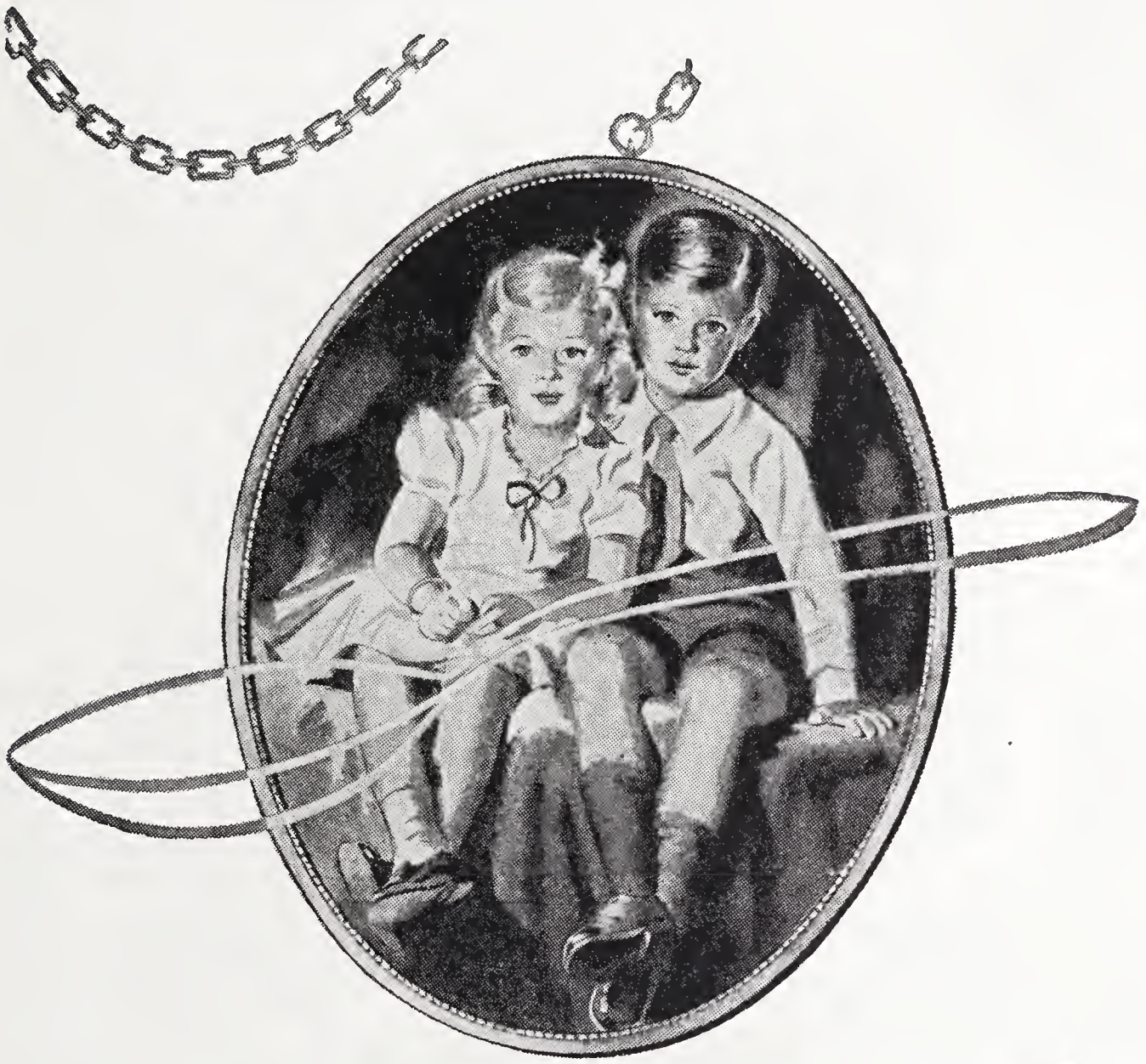

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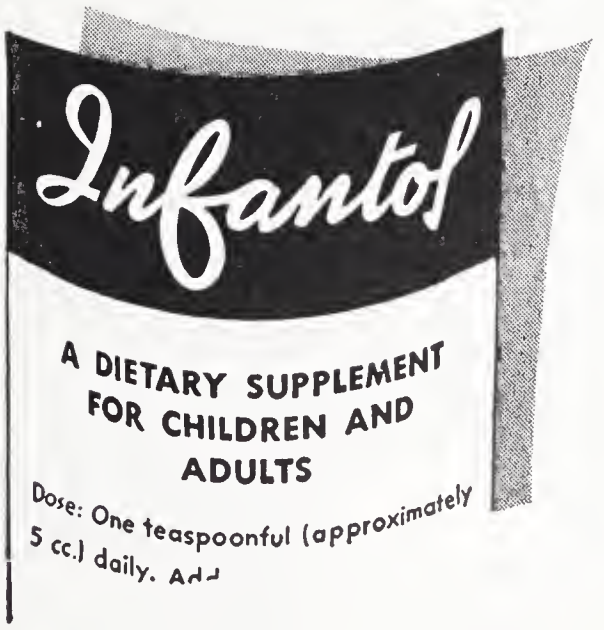

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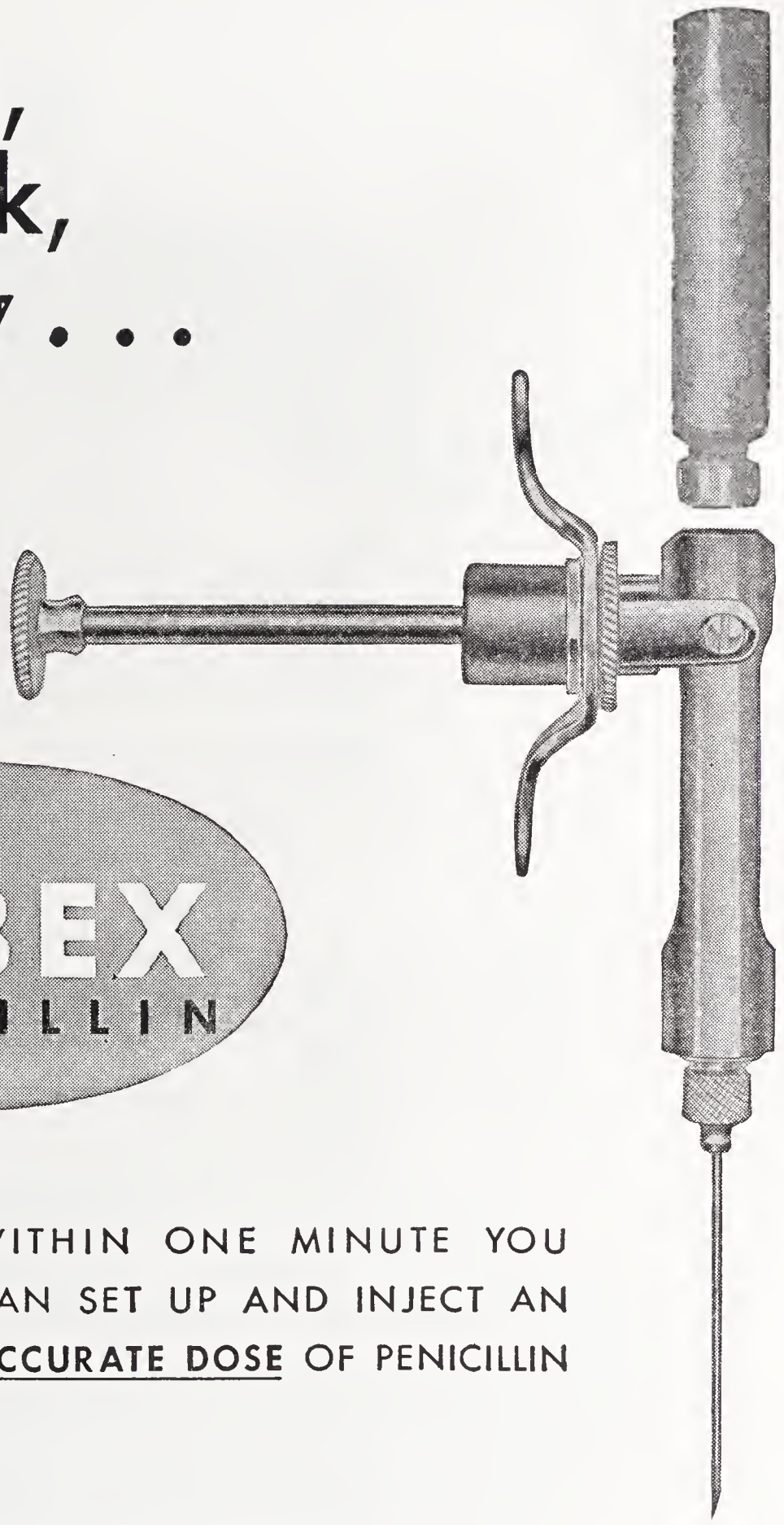

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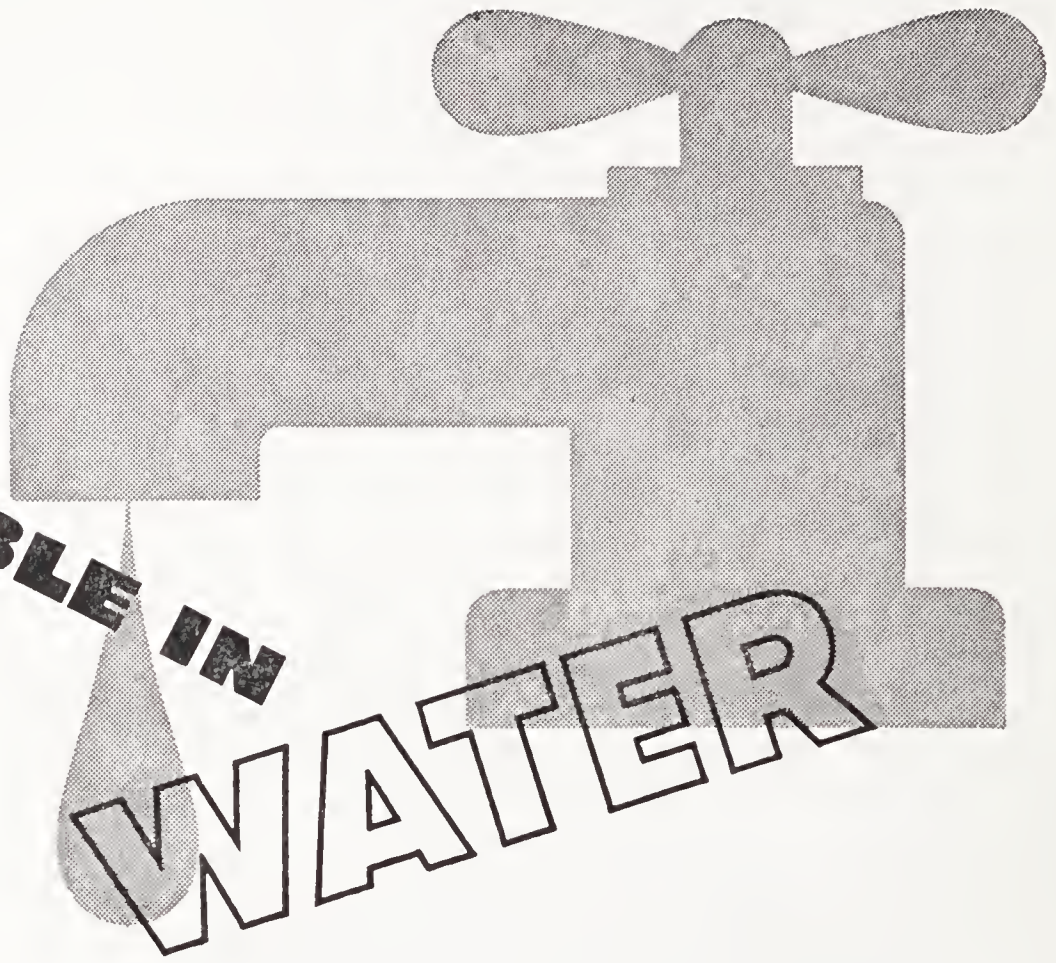

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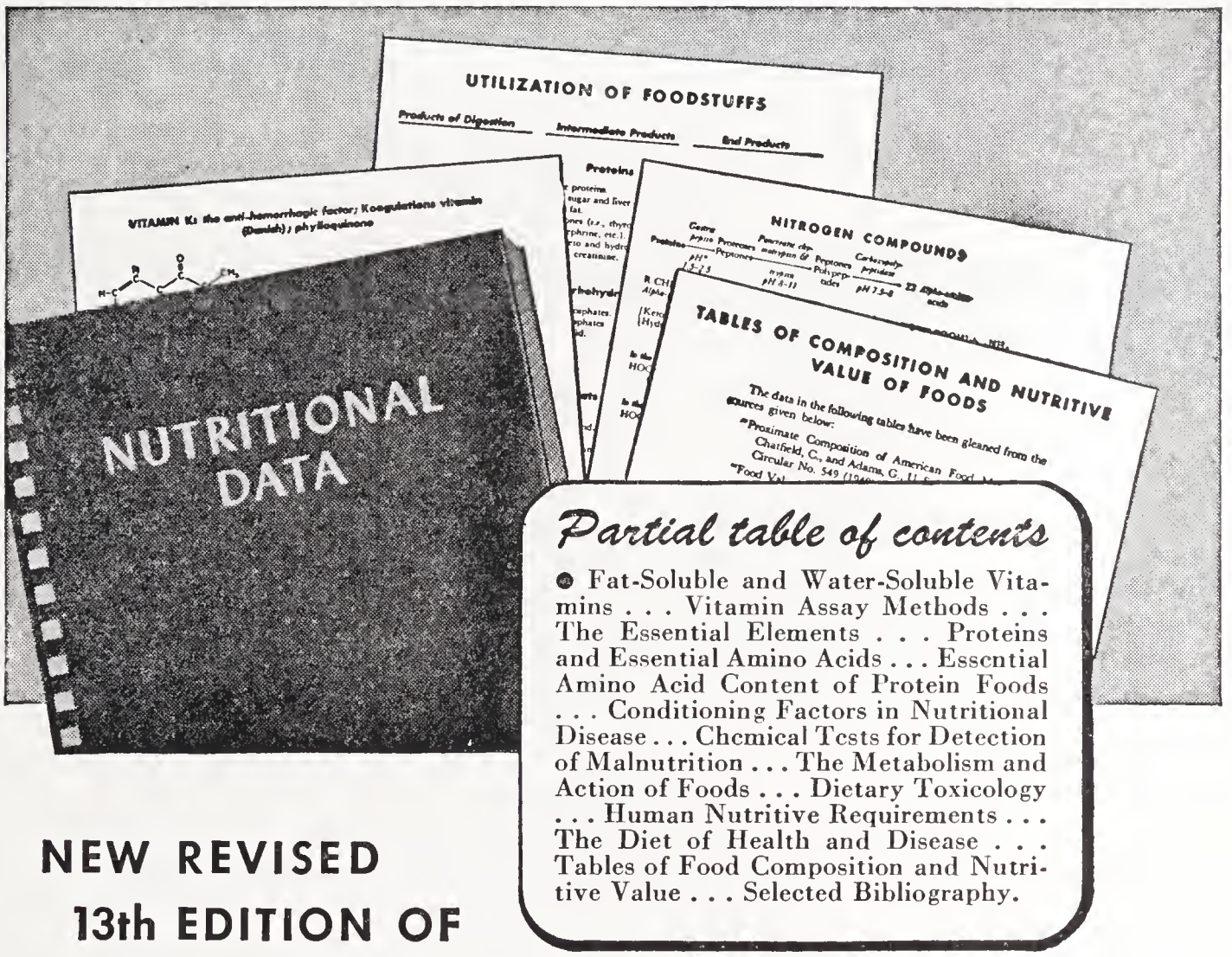

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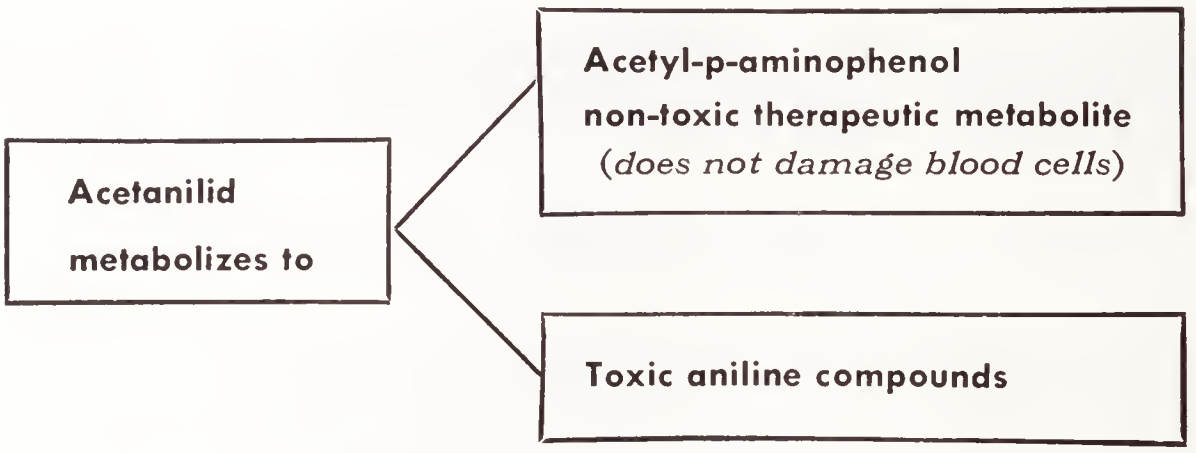

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Potassium citrate	40 gr.
Tincture of Ipecac	20 min.
Chloroform	8/10 min.
Simple syrup, flavoured	q.s.

"NUSILYN" with CODEINE

Each fluid ounce contains:

The Nusilyn formula modified to contain
Codeine phosphate ..... 1 gr.
This modification will be found especially useful during the early (pre-exudative) stage of acute bronchitis, when it may be desirable to suppress the cough reflex.

DOSE

Adults: 1 to 2 drams diluted with a wine glass of water and taken every four hours.

Children: 1-2 years, 15 minims; 2-4 years, 20 to 30 minims; well diluted with water and taken every four hours, preferably after meals.

Older Children: In proportion to age.

MODES OF ISSUE

Both formulae available in 4 oz. and 16 oz. bottles.

Charles E. Frosst & Co.
MONTREAL CANADA

Frosst SINCE 1899 THE SYMBOL OF PROGRESS IN PHARMACEUTICAL RESEARCH

SUPERIOR

PENICILLIN THERAPY WITH

Penicillin S-R

TRADE MARK

S *oluble*

plus **R** *epository penicillin*

for the physician

faster, higher initial levels... prolonged, high maintenance levels... better control of infection... quickly injected

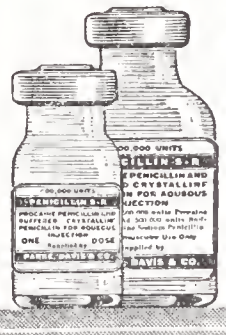
for the nurse

easily prepared... aqueous diluent... no vigorous shaking... free-flowing in syringe and needle

for the patient

no sensitizing diluents... complete absorption—no wax or oil... minimal pain

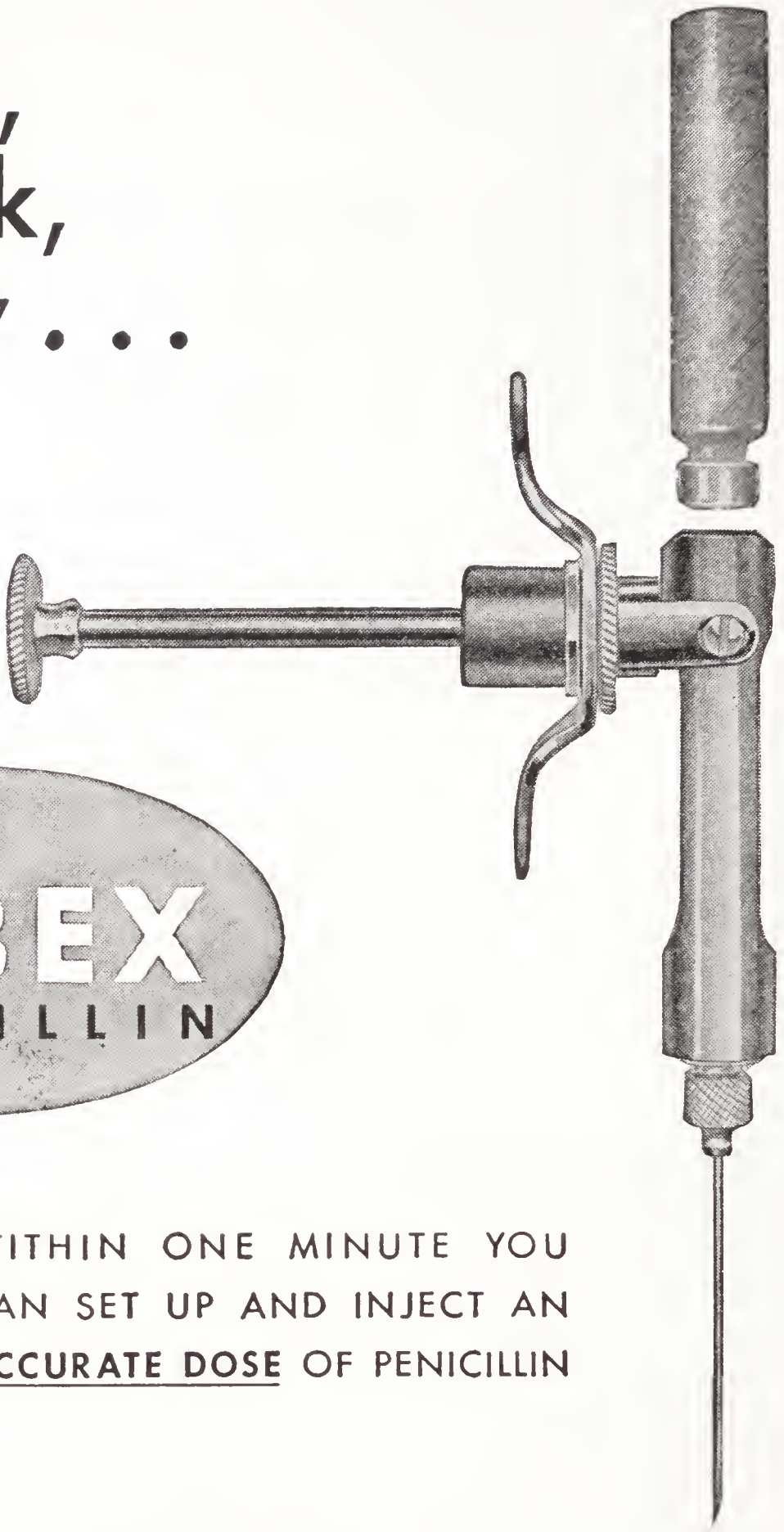
Penicillin S-R is supplied in one-dose (400,000 units), five-dose (2,000,000 units) and ten-dose (4,000,000 units) vials. When diluted according to directions, each cc. contains 300,000 units of crystalline procaine penicillin-G and 100,000 units of buffered crystalline sodium penicillin-G. The one-dose vial is also available, if desired, with an accompanying ampoule of Water for Injection, B.P. Potency of the suspension is maintained for seven days at refrigerator temperatures.



PARKE, DAVIS & COMPANY

MEDICAMENTA VERA

Safe, quick, easy . . .



TUBEX
PENICILLIN

WITHIN ONE MINUTE YOU CAN SET UP AND INJECT AN **ACCURATE DOSE** OF PENICILLIN

TUBEX LENTOPEN
300,000 I.U. Procaine Penicillin-G in Oil with Aluminum Monostearate

TUBEX LENTOPEN ALL-PURPOSE
400,000 I.U. Procaine Penicillin-G and Potassium Penicillin-G in Oil with Aluminum Monostearate

TUBEX WYCILLIN 300 SUSPENSION
300,000 I.U. Procaine Penicillin-G for Aqueous Injection

TUBEX WYCILLIN 600 SUSPENSION
600,000 I.U. Procaine Penicillin-G for Aqueous Injection

Also—WYCILLIN FORTIFIED and WYCILLIN for Aqueous Injection, single, five and ten dose vials.

Wyeth
Registered Trade Mark